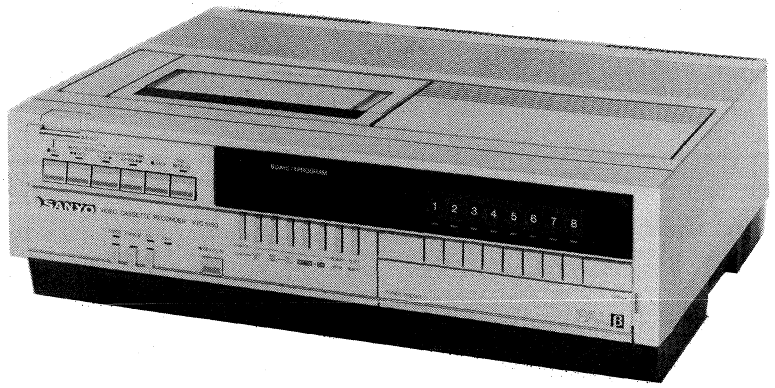
SERVICE MANUAL

SANYO

COLOUR VIDEO
CASSETTE RECORDER

VTC 5150
(CONTINENT)

Beta



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VII CIRCUIT DIAGRAMS

BETA-FORMAT VIDEO CASSETTE RECORDER SPECIFICATIONS

Television system	CCIR I/PAL standard colour TV
Recording system	Rotary two-head helical-scan system
Tape speed	18.73 mm/sec.
Recording time	3 hours 35 minutes with L-830 cassette
Tape loading	Automatic loading (U-type)
Video cassettes	L-250, L-500, L-750 and L-830 Dimensions: 96(W) x 25(H) x 156(D) mm
Tuner	8-channel varactor tuner
Tuner input	Channel 21 – 68
RF converter	Built-in UHF converter
Converter output	Channel 30 – 39 (adjustable) ; pre-adjusted to 36
Timer	Built-in digital timer, 24-hour clock, 8 days-one programme timer
Tape counter	4 figures display electronic counter
Tape rewind memory	Push button setting
Fast forward time	6 min. with L-750 cassette
Rewind time	6 min. with L-750 cassette
Electrical characteristics	
Video output level	1 ± 0.2 Vp-p
Video output impedance	75 ± 5 ohms
Audio output level	–5 dB
Video input level	0.5 – 2 Vp-p
Video input impedance	75 ± 5 ohms
Audio input level	–10 dB
Audio input impedance	High
Video S/N	More than 42 dB
Audio S/N	More than 40 dB
Horizontal resolution	270 lines
Audio bandwidth	50 Hz – 10 kHz
Other characteristics	
Wow and flutter	Less than 0.3 % (DIN)
Loading time	Less than 4 sec.
Unloading	Less than 4 sec.
Power requirement	AC 240 V ± 10%, 50 Hz, 32W
Dimensions	440 (W) x 135 (H) x 330 (D) mm
Weight	8kg

The power switch of this set is connected in the secondary circuit and does not disconnect the set from AC-power even if the switch is off (STAND BYposition) whilst the AC cord remains connected to the AC line.

FEATURES

- Popular BETA recording format
- Reverse colour picture playback
- Three hours 35 minutes recording time with a compact L-830 video cassette
- Built-in preset UHF tuner
- Programmable timer enables 1 unattended recording within 8 days
- Soft touch mechanism operation
- Digital tape counter with "0000" position memory
- Fast colour picture scanning, forward and reverse

II. CABINET DISASSEMBLY

1. CASSETTE COVER

Remove the veil from Cassette Cover with small screwdriver. Remove two screws (a) on the Cassette Cover as indicated, and remove the Cassette Cover.

2. CABINET TOP

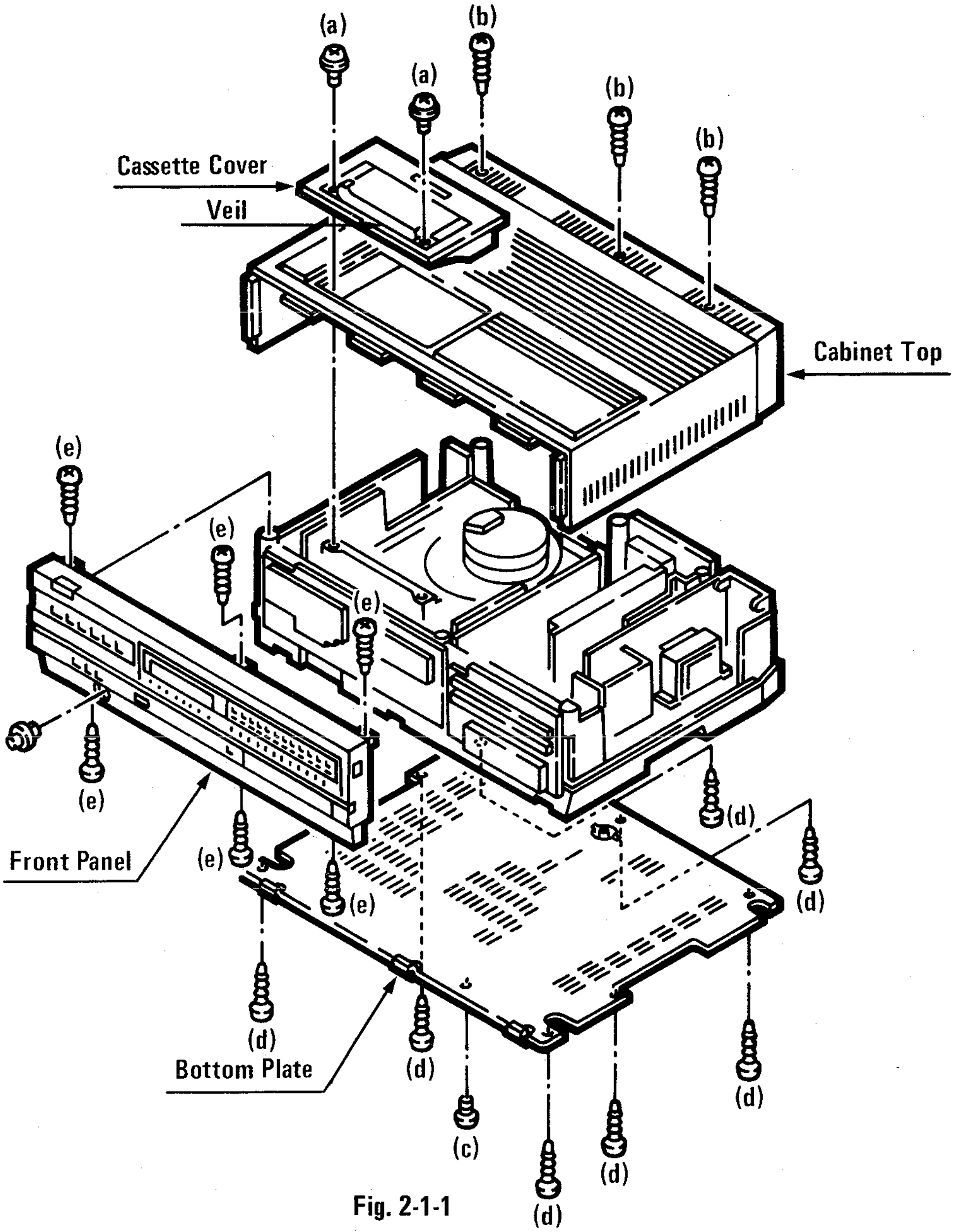
Remove three screws (b) on the Cabinet Top as indicated, and carefully lift up the Cabinet Top.

3. BOTTOM PLATE

Place the VCR with the right side down on a soft surface, and remove screw (c) and seven screws (d) on the Bottom Plate as indicated.

4. FRONT PANEL ASSEMBLY

Remove six screws (e) securing Front Panel, and remove the Front Panel.



(a)
(b)
(a)
(b)
(b)
Cassette Cover
Veil
Cabinet Top
(e)
(e)
(e)
(e)
Front Panel
(e)
(e)
(d)
(d)
(d)
Bottom Plate
(d)
(c)
(d)
(d)
(d)

Fig. 2-1-1

III. CIRCUIT BOARD DISASSEMBLY

A. CIRCUIT BOARD LOCATIONS

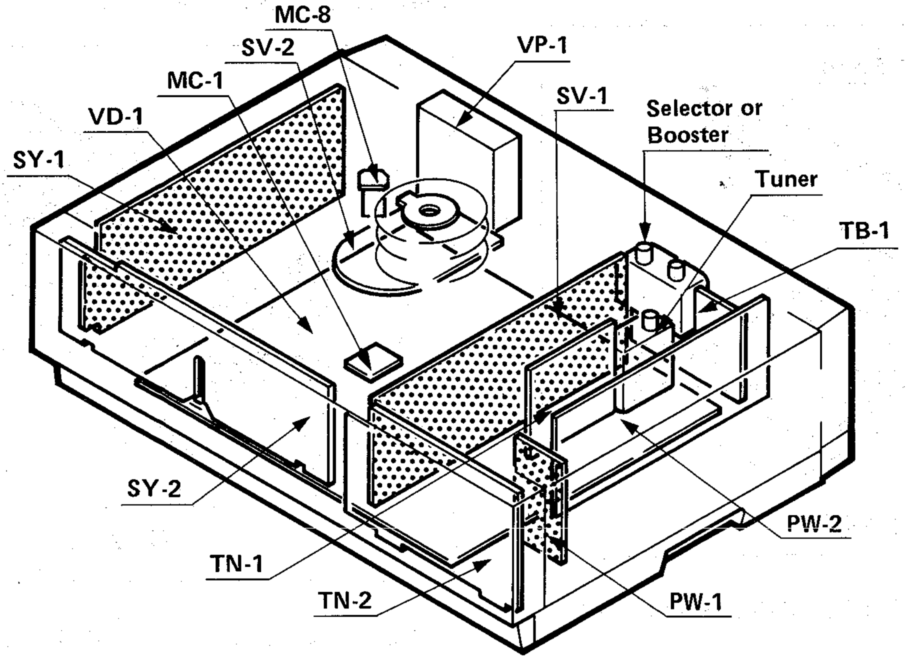

MC-8
SV-2
MC-1
VD-1
SY-1
VP-1
SV-1
Selector or Booster
Tuner
TB-1
SY-2
TN-1
TN-2
PW-1
PW-2

Fig. 3-1-1

B. CIRCUIT BOARD DISASSEMBLY

Circuit boards SV-1, TN-1 and TB-1 are not held in place by screws. They can be removed by lifting them up, so further explanation will be omitted here. Each circuit board has several connectors connected to them, so pay careful attention when removing them.

1. BOTTOM CIRCUIT BOARD (VD-1: VIDEO PREAMP, VIDEO, AUDIO AND RF CONVERTER CIRCUIT)

(1) Place the VCR with the right side down on a soft surface.

(2) Remove the Bottom Plate as explained in **IV. CABINET DISASSEMBLY.**

(3) Remove eight screws (a) on the Bottom Circuit Board. The Board opens to the left as illustrated in Fig. 3-2-1.

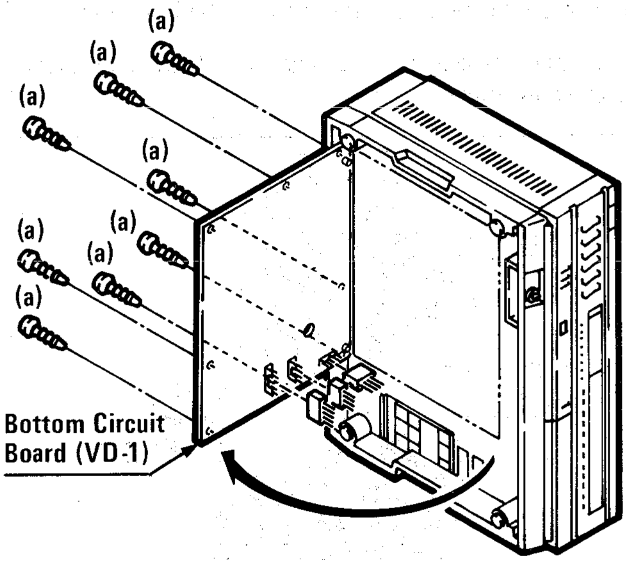

(a)
(a)
(a)
(a)
(a)
(a)
(a)
(a)
Bottom Circuit Board (VD-1)

Fig. 3-2-1

Note:
It is possible to adjust and/or change the components on the Bottom Board in this condition.

To completely remove the Bottom Board from the chassis:

(4) Disconnect ten connectors from the Board.

(5) Disengage the Hinge at the lower left corner of the Board and then at the top left.

2. SY-1 BOARD (SYSTEM CONTROL CIRCUIT)

(1) Remove screw (a) retaining the Bracket P.C.Board and lift up the Bracket P.C. Board.

(2) Disconnect connectors from the Board and pull out the Board as illustrated in Fig. 3-2-2.

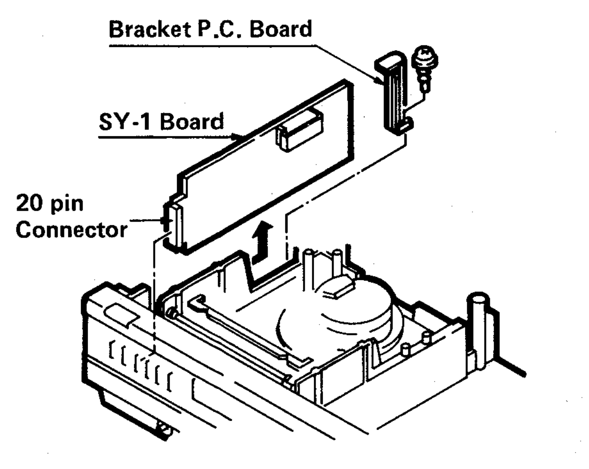

Bracket P.C. Board
SY-1 Board
20 pin Connector

Fig. 3-2-2

3. PW-1·PW-2 BOARD (PW-1: DC POWER SUPPLY, PW-2: SWITCHING)

(1) Remove five screws (a) and (b) retaining the Bracket Power Transformer and carefully lift up the Bracket Power Transformer.

(2) Remove screw (c) retaining the Insulator and lift up the Insulator.

(3) Remove screw (d) and (e) retaining the Heat sink.

(4) Remove screws (f) retaining the Board and Bracket Power Transformer.

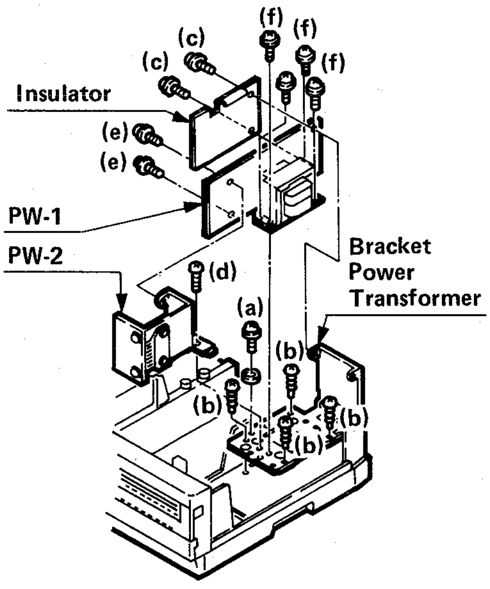

(f)
(f)
(c)
(c)
(f)
Insulator
(e)
(e)
PW-1
PW-2
(d)
Bracket Power Transformer
(a)
(b)
(b)
(b)
(b)

Fig. 3-2-3

4. SY-2 BOARD (SYSTEM CONTROL, SERVO AND TIMER CIRCUIT)

(1) Remove five screws (a).

(2) Disconnect connectors from the Board and remove the Board as illustrated in Fig. 3-2-4.

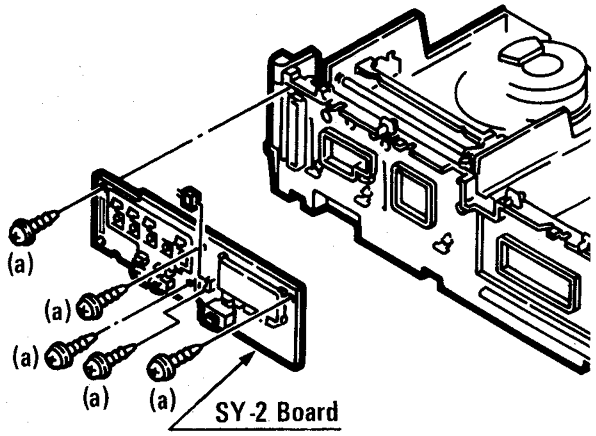

(a)
(a)
(a)
(a)
(a)
SY-2 Board

Fig. 3-2-4

5. TN-2 BOARD (TUNER CHANNEL PRESET CIRCUIT)

(1) Remove two screws (a).

(2) Disconnect two connectors from the Board and remove the Board as illustrated in Fig. 3-2-5.

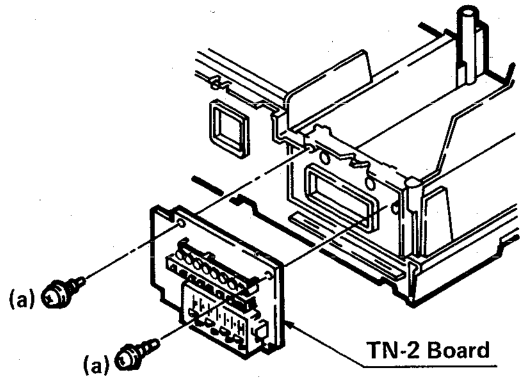

(a)
(a)
TN-2 Board

Fig. 3-2-5

IV. CIRCUIT ADJUSTMENTS

A. POWER SUPPLY CIRCUIT (PW-2 CIRCUIT BOARD)

1. +10V Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR5201	TP5201 TP5202 (GND)	Digital voltmeter	Power switch "ON" STOP mode

a. Connect the digital voltmeter to TP5201 and TP5202 (earth).

b. Adjust VR5201 so that the voltage is DC 9.8 ±0.1V.

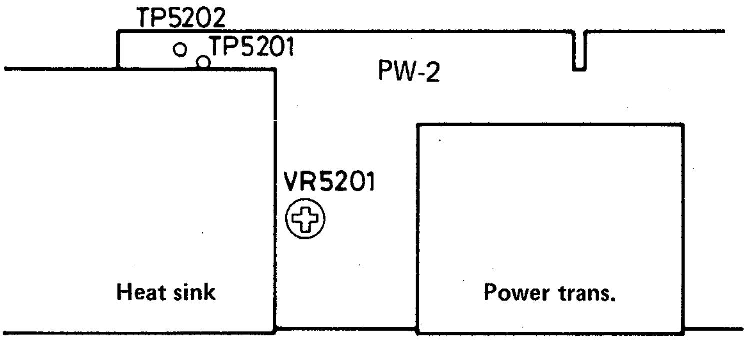

TP5202
TP5201
PW-2
VR5201
Heat sink
Power trans.

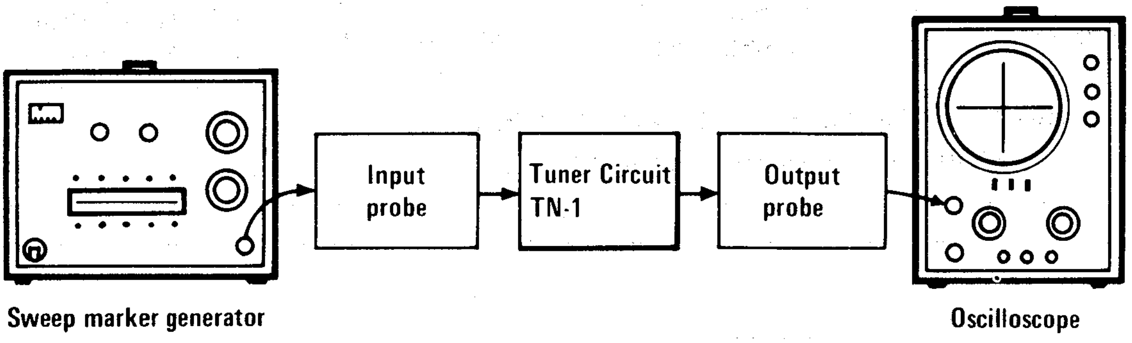
Fig. 4-1-1 PW-2 Circuit board (Parts side view)

B. TUNER CIRCUIT (TN-1 CIRCUIT BOARD)

(Refer to Fig. 4-2-2.)

Connect a sweep maeker generator and an oscilloscope as shown in Fig. 4-2-1.
Supply the output signal from the sweep marker generator to the TN-1 circuit board through an input probe, and supply the output signal from the circuit board, through an output probe, to the oscilloscope.

Set the tuner band selector to the "III"* position.


Input probe
Tuner Circuit TN-1
Output probe
Sweep marker generator
Oscilloscope

Asterisked (*) symbol differ depending on the country as follows:	
Europe, Australia, New Zealand	III
UK, Hongkong, S. Africa	U
Europe Special Cable TV	VL

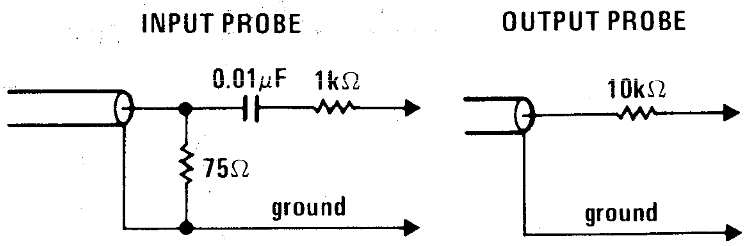
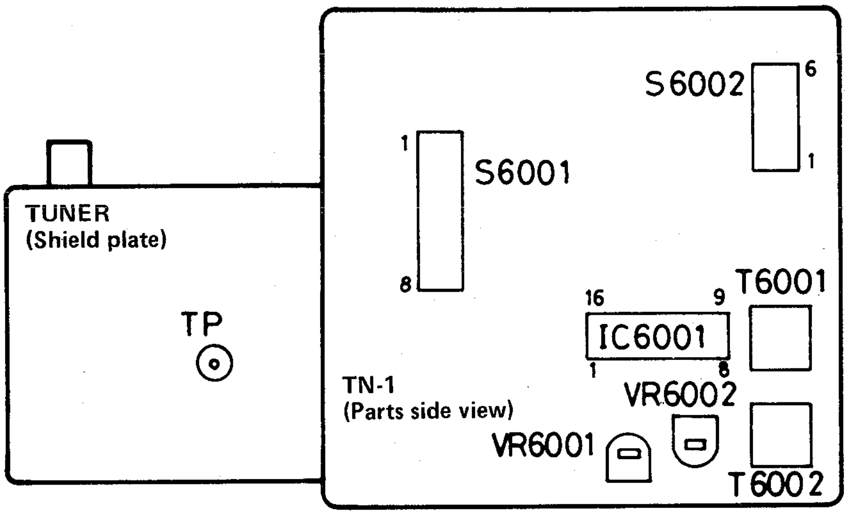

INPUT PROBE
0.01μF
1kΩ
75Ω
ground
OUTPUT PROBE
10kΩ
ground

Fig. 4-2-1


S6002
6
1
1
S6001
8
TUNER
(Shield plate)
TP
16
9
T6001
IC6001
1
8
TN-1
(Parts side view)
VR6002
VR6001
T6002

Fir. 4-2-2 TN-1 Circuit Board (Parts side view)

1. VIF Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
Converter transformer	E of Q6004	Sweep marker generator Oscilloscope DC power supply Special screwdriver	STOP mode

a. Connect a 22-ohm resistor between pin (9) and pin (8) of IC6001 and disconnect the S6002 connector.

b. Supply DC +0.8V to pin (14) of IC6001 as an AGC voltage.

c. Set the output level of the sweep marker generator to VIF, -25 dB (28mVrms), and connect the output to the TP terminal of tuner through an input probe.

d. Connect the output signal at E of Q6003 on the circuit board to the oscilloscope through an output probe, and observe the waveform.

e. Adjust the AGC voltage so that the waveform level is equal to 0.8Vp-p.

f. Adjust the converter transformer of the tuner so that P (the 38.9-MHz[*1] marker) becomes 40 ±[*2] 2%. (See Fig. 4-2-3.)

g. Remove the 22-ohm resistor, and reconnect the S6002 connector

2. Detection Transformer

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T6001	E or Q6003	Sweep marker generator Oscilloscope DC power supply Special screwdriver	STOP mode

a. Supply DC +2V to pin (14) of IC6001 as an AGC voltage, and remove the S6002 connector.

b. Set the output level of the sweep marker generator to VIF, -25dB (28mVrms), and connect the output to the TP terminal of tuner through an input probe.

c. Connect the output signal at E of Q6003 on the circuit board to the oscilloscope through an output probe, and observe the waveform.

d. Adjust AGC voltage so that the waveform level is equal to 2.5Vp-p.

e. Adjust the T6001 core so that P (the 38.9-MHz[*3] marker) becomes 80%.[*4] (See Fig 4-2-4.)

f. Connect the S6002 connector.

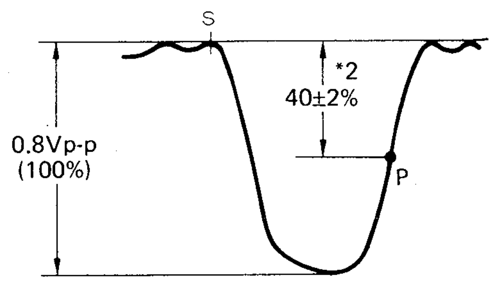


Fig. 4-2-3

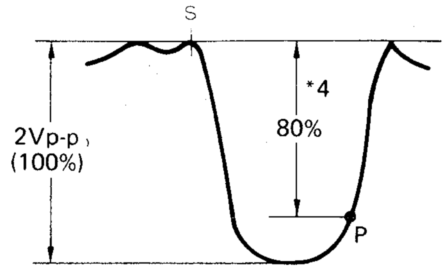


Fig. 4-2-4

3. AFT Circuit (1)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T6002	Pin (6) of S6001	Sweep marker generator Oscilloscope DC power supply Special screwdriver	STOP mode AFT switch "ON"

a. Supply DC +3.5V to Pin (14) of IC6001 as an AGC voltage.

b. Set the output level of the sweep marker generator to VIF, -13dB (112mVrms), and connect the output to the TP terminal of the tuner through an input probe. (See Fig. 4-2-2.)

c. Connect the output signal at pin (6) of S6001 on the circuit board to the oscilloscope through an output probe, and observe the waveform.

d. Adjust T6002 so that P (the 38.9-MHz[*5] marker) is positioned on the base line.

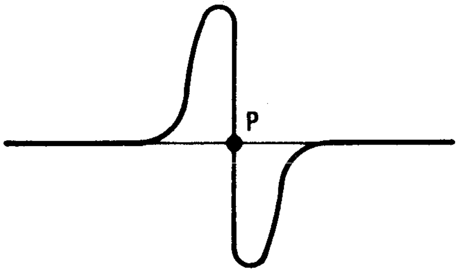


Fig. 4-2-5

Asterisked (*) numerals differ depending on the country as follows.

	*1	*2	*3	*4	*5
Europe	38.9MHz	40±2%	38.9MHz	80%	38.9MHz
UK, Hongkong, S. Africa	39.5MHz	38±10%	39.5MHz	70%	39.5MHz
Australia, New Zealand	36.875MHz	40±2%	36.875MHz	80%	36.875MHz
Europe Special Cable TV	38.9MHz	35±2%	38.9MHz	75%	38.9MHz

4. RF AGC Circuit

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR6001	Tuner AGC terminal	Colour-bar generator with RF Digital voltmeter	STOP mode

a. Connect the colour-bar generator to the antenna input connector (ANT IN) of the VCR. (^{*1}VHF input: channel ^{*2}5 or UHF: input channel 31. ^{*3}69dBμ ±1dBμ; modulation degree 87.5%)

b. Press the channel selector corresponding to channel 5 or ^{*4}31, and tune the VCR for the best possible reception by observing the picture on the screen.

c. Set the AFT switch to the "ON" position.

d. Measure the voltage at the AGC terminal of the tuner, and adjust VR6001 so that the voltage is ^{*5}5.7 ± 0.1V. (UHF: 5.0 ±0.1V)

5. Audio Output

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
—	Pin (4) of S6002	TV signal generator Oscilloscope	STOP mode

a. Connect the TV signal generator to the antenna input connector (ANT IN) of the VCR. [^{*6}VHF input: channel ^{*7}5, 60dBμ (1mVrms) or higher, 60% modulation with sine audio signal at 400 Hz]

b. Press the channel selector corresponding to channel ^{*8}5, and tune the VCR for the best possible reception by observing the picture on the screen.

c. Set the AFT switch to the "ON" position.

d. Observe the waveform of the audio output signal at pin (4) of S6002 on the oscilloscope, and confirm so that the output level is equal to 0.69 ±0.34Vp-p.

Asterisked (*) numerals and symbols differ depending on the country as follows.

	*1	*2	*3	*4	*5	*6	*7	*8
Europe	VHF	Channel 5	69dBμ	Channel 5	5.7	VHF	Channel 5	Channel 5
UK, Hongkong, S.Africa	UHF	Channel 31	69dBμ	Channel 31	5.7	UHF	Channel 31	Channel 31
Australia, New Zealand	VHF	Channel 5	66dBμ	Channel 5	4.5	VHF	Channel 5	Channel 5
Europe special Cable TV	VHF	Channel 5	66dBμ	Channel 5	5.3	VHF	Channel 5	Channel 5

C. SERVO CIRCUIT (SV-1 CIRCUIT BOARD) (Refer to Fig. 4-3-1.)

[HEAD SERVO SYSTEM]

1. Head Switching Position Pre-setting

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4001 VR4002	——	——	——

a. Align VR4001 and VR4002 to the centre position of the rotation angle.

2. APC Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4005	TP4002	Oscilloscope Video cassette	REC mode

a. Load a video cassette suitable for recording and set the VCR for the recording of a television broadcast.

b. Connect the oscilloscope to TP4002.

c. Adjust VR4005 so that the voltage is DC 3.2 ±0.1V.

3. FWD Lock Position

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4003	TP4001 Video output terminal	Oscilloscope Video cassette	REC mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast.

b. Connect channel 1 of the oscilloscope to TP4001 (RF switching pulse).

c. Connect channel 2 of the oscilloscope to the video output terminal.

d. Adjust VR4003 so that the leading edge of the vertical synchronizing signal of the video signal (video output terminal) is delayed 7H ± 0.5H from the fall of the RF switching pulse. **(Refer to Fig. 4-3-2.)**

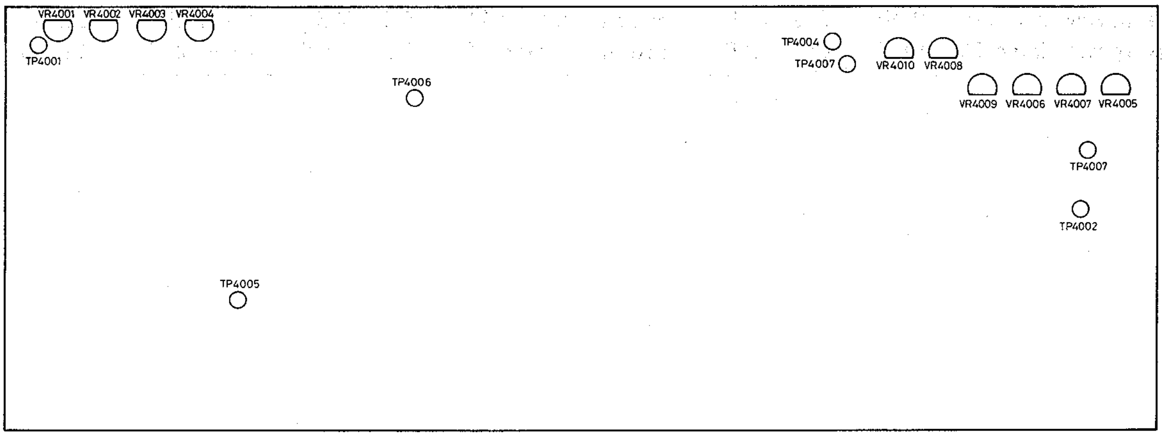


Fig. 4-3-1 SV-1 Circuit Board (Parts side view)

4. Head Switching Position

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4002 VR4001	TP4001 Video output terminal	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and set the VCR to the PLAY mode.

b. Connect channel 1 of the oscilloscope to TP4001 (RF switching pulse).

c. Connect channel 2 of the oscilloscope to the video output terminal.

d. Turn the tracking control knob so that the maximum amplitude of the RF signal is obtained.

e. Adjust VR4002 so that the leading edge of the vertical synchronizing signal of the video signal (video output terminal) is delayed 7H ± 0.5H from the fall of the RF switching pulse.

f. Adjust VR4001 so that the leading edge of the vertical synchronizing signal of the video signal (video output terminal) is delayed 7H ± 0.5H from the rise of the RF switching pulse.

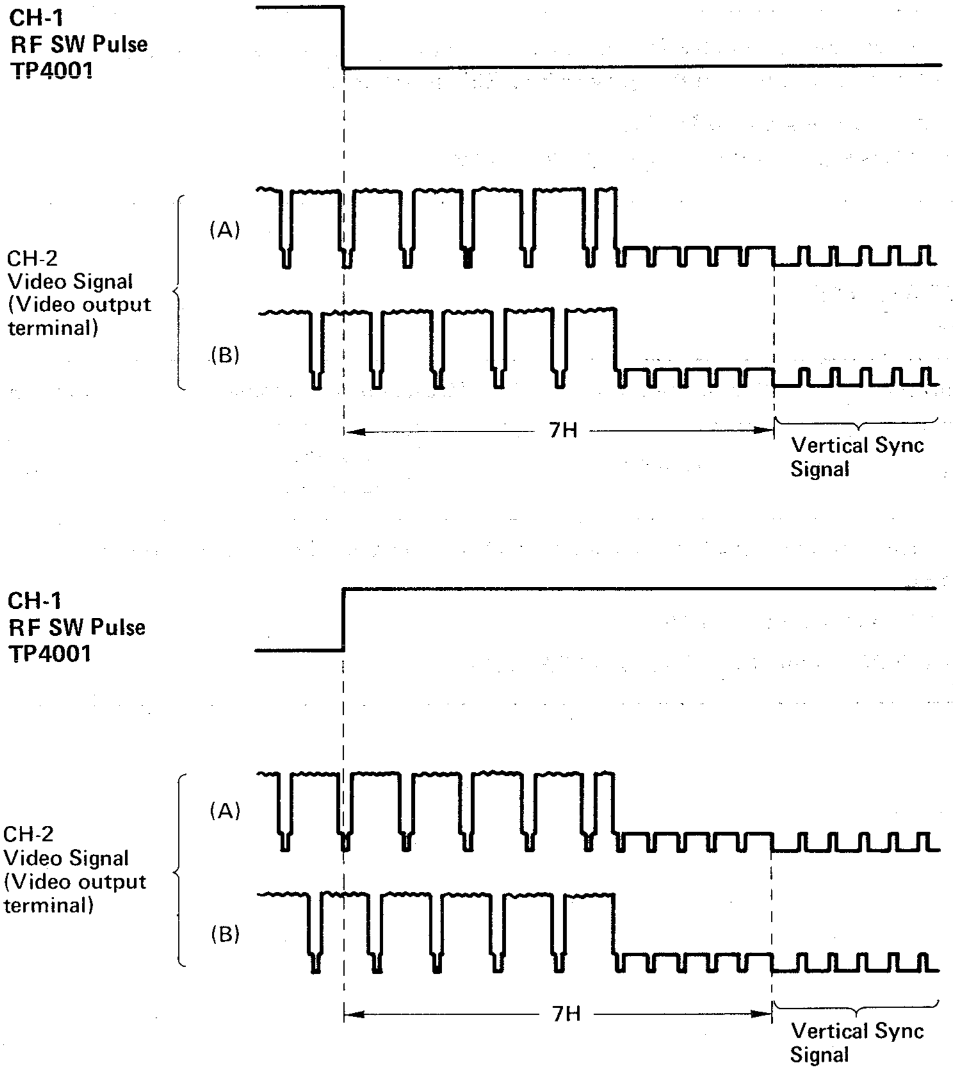

CH-1
RF SW Pulse
TP4001
CH-2
Video Signal
(Video output terminal)
(A)
(B)
7H
Vertical Sync Signal
CH-1
RF SW Pulse
TP4001
CH-2
Video Signal
(Video output terminal)
(A)
(B)
7H
Vertical Sync Signal

Fig. 4-3-2

5. FWD Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4007	TP4002	Oscilloscope Video cassette	FWD Search mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to FWD search mode.

b. Connect the oscilloscope to TP4002.

c. Adjust VR4007 so that the voltage is DC 3.2 ±0.1V.

6. REV Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment conditon
VR4006	TP4002	Oscilloscope Video cassette	REV Search mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to REV search mode.

b. Connect the oscilloscope to TP4002.

c. Adjust VR4006 so that the voltage is DC 3.2 ±0.1V.

[CAPSTAN SERVO SYSTEM]

1. APC FWD Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4010	TP4004	Oscilloscope Video cassette	REC mode

a. Load a video cassette suitable for recording, and then set the VCR for the recording of a television broadcast.

b. Connect the oscilloscope to TP4004.

c. Adjust VR4010 so that the voltage is DC 3.8 ±0.1V.

2. Tracking

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4004	TP4001 TP4005	Oscilloscope Video cassette	PLAY mode

a. Load a video cassette suitable for recording, and then set the VCR for the recording of a television broadcast.

b. Set the tracking control to the centre (notched) position.

c. Connect channel 1 of the oscilloscope to TP4001 (RF switching pulse).

d. Connect channel 2 of the oscilloscope to TP4005 (playback control pulse).

e. Playback the recorded television broadcast.

f. Adjust VR4004 so that the rise of the playback control pulse is delayed to 3.4 ±0.3 milliseconds after the fall of the RF switching pulse.

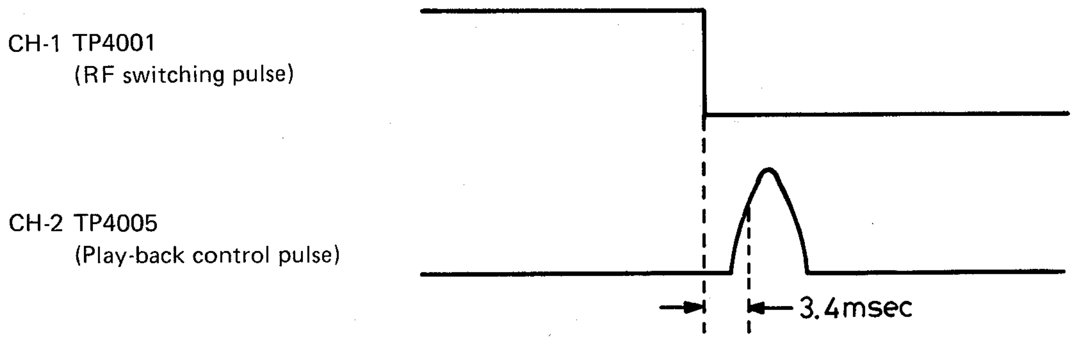


Fig. 4-3-3

3. FWD Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4009	TP4004	Oscilloscope Video cassette	FWD Search mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to FWD search mode.

b. Connect the oscilloscope to TP4004.

c. Adjust VR4009 so that the voltage is DC 3.8 ±0.1V.

4. REV Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4008	TP4004	Oscilloscope Video cassette	REV Search mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to REV search mode.

b. Connect the oscilloscope to TP4004.

c. Adjust VR4008 so that the voltage is DC 3.8 ±0.1V.

5. Tracking (REV-PLAY)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4011	TP4006 TV screen	Oscilloscope Video Cassette	REV-PLAY mode

a. Load a video cassette suitable for recording, and then set the VCR for the recording of a television broadcast.

b. Set the tracking control to the centre (notched) position.

c. Connect the oscilloscope to TP4006.

d. Playback the recorded television broadcast.

e. Adjust VR4011 so that the delay time is 25 ± 1 milliseconds.

f. Next, adjust VR4001 so that the noise-bar is minimized. (TV screen)

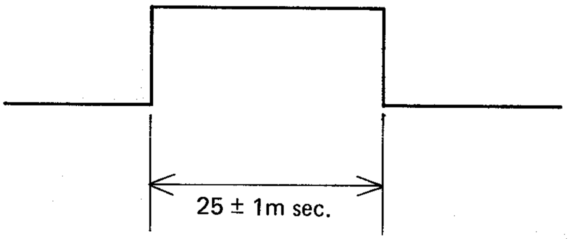


Fig. 4-3-4

D. VIDEO CIRCUIT
(VP-1 CIRCUIT BOARD) (Refer to Fig. 4-4-2.)

[ADJUSTMENTS FOR THE VP-1]

1. Preamplifier Frequency Response

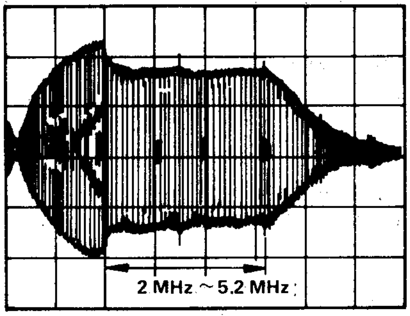
Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1503 (channel A) VR1502 (channel B)	Pin (3) of S1502	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113), and playback the RF sweep signal.

b. Connect the oscilloscope to pin (3) of S1502.
At this time, use pin (1) of S1502 (RF switching pulse) for the trigger pulse for waveform observation.
Trigger slope +: Channel B
: Channel A

c. Turn the tracking VR so that the waveform amplitude reaches the maximum level.

d. Adjust VR1503 (channel A) and VR1502 (channel B), so that the amplitude at 5.2 MHz is about 90% of the amplitude at 3.58 MHz.



Horizontal: 2 msec/div.
Vertical: 0.1 V/div.

*Adjustment procedure when the alignment cassette (VJ-0113) is not available.
Adjust VR1503 and VR1502 until any "flicker" or "FM inversion: black noise" disappear.

Fig. 4-4-1

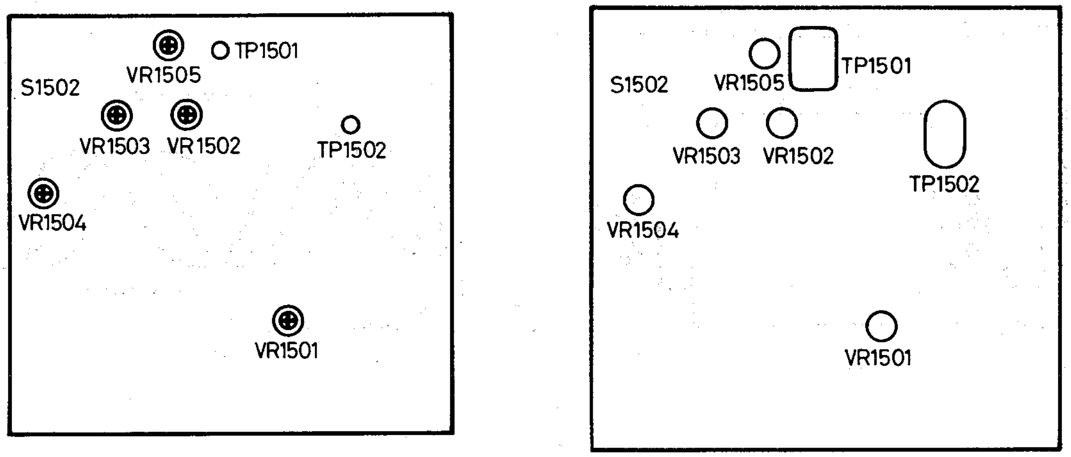

S1502
VR1505
TP1501
VR1503
VR1502
TP1502
VR1504
VR1501
S1502
VR1505
TP1501
VR1503
VR1502
TP1502
VR1504
VR1501

Fig. 4-4-2 VP-1 Circuit Board

2. Dropout Compensator Sensitivity

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1501	TV screen	Alignment cassette (VJ-0077)	PLAY mode

a. Load the alignment cassette (VJ-0077), and the VCR to the PLAY mode.

b. Turn VR1501 completely to right (when seen from the hoil side).

c. Next, turn VR1501 slowly back to the right to adjust the non-compensation portion so that it is 0.8 ~ 1.0 colour bar.

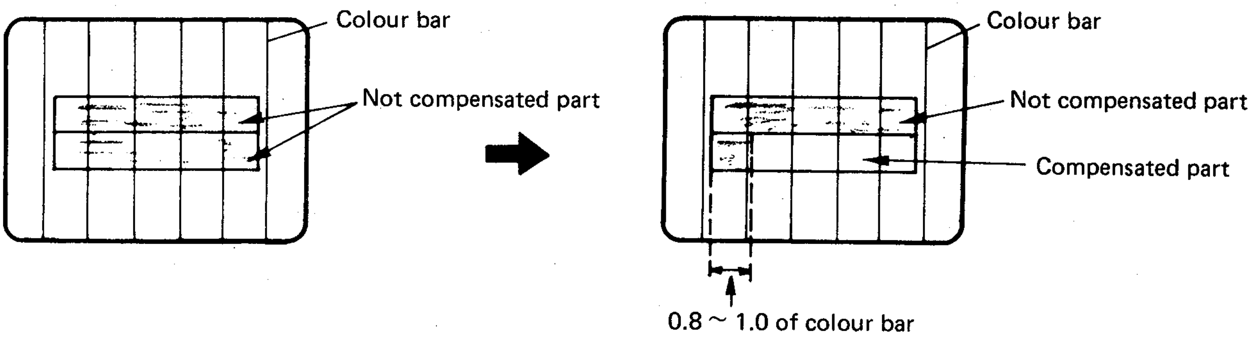

Colour bar
Not compensated part
Colour bar
Not compensated part
Compensated part
0.8 ~ 1.0 of colour bar

Fig. 4-4-3

* Adjustment procedure when the dropout adjustment tape (VJ-0077) is not available.
  a. Playback a tape that has a lot of dropout.
  b. Adjust VR1501 until dropout is compensated for.

3. Recording Amplifier Frequency Response

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1505	TP1502 TP1501	Oscilloscope Colour-bar generator	REC mode

a. Set VR1505 to the centre position.

b. Input a colour-bar signal which includes a 100% white signal and set the VCR to the REC mode.

c. Connect the oscilloscope to TP1502, and then connect TP1501 to earth.
NOTE: Because TP1501 is Vcc (+ 9V), be sure not to connect it to the earth of the VCR chassis.

d. Adjust VR1505 so that the waveform becomes flat.

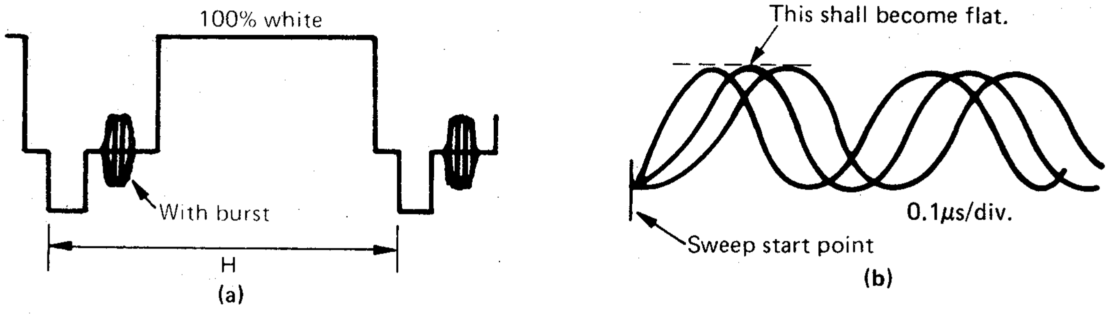

100% white
With burst
H
(a)
This shall become flat.
0.1μs/div.
Sweep start point
(b)

Fig. 4-4-4

4. Recording Current

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1504	TP1502 TP1501	Oscilloscope Colour-bar generator	REC mode

a. Input a black-and-white signal containing a 100%, white signal and set the VCR to the REC mode.

b. Connect the oscilloscope to TP1502, and then connect TP1501 to earth.

c. Adjust VR1504 so that it is 140 ±10mVp-p.

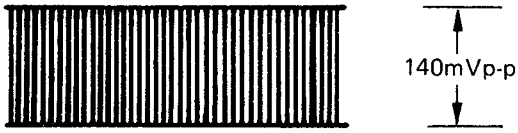


Fig. 4-4-5

[ADJUSTMENTS FOR LUMINANCE SYSTEM]

(Refer to Fig. 4-4-14, VD-1 circuit board)

1. 4.43-MHz Trap

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1002	Pin (3) of DL1001	Oscilloscope Colour-bar generator	EE mode

a. Input a colour-bar signal (EE colour-bar signal).

b. Connect the oscilloscope to Pin (3) of DL1001.

c. Adjust T1001 so that the chrominance component is minimized.

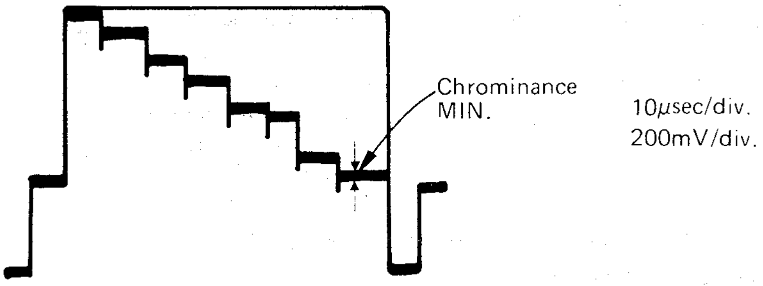


Fig. 4-4-6

2. SYNC AGC and Peak AGC

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1005 VR1004	TP1001	Oscilloscope Colour-bar generator	EE mode

a. Turn VR1004 completely to the right (when seen from the hoil side).
b. Input a colour-bar signal which contains a 100% white signal.
c. Connect the oscilloscope to TP1001.
d. Adjust VR1005 so that it is 0.76 ±0.02Vp-p. (Sync AGC)
e. Attenuate the sync signal level by 3 dB.
f. Adjust VR1004 so that it is 0.80 ±0.05Vp-p. (Peak AGC)

3. EE Level Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1001	TP1005	Oscilloscope Colour-bar generator	EE mode

a. Input a colour-bar signal which contains a 100% white signal.
b. Connect the oscilloscope to TP1005.
c. Connect the 75 ohms impedance to video output terminal.
d. Adjust VR1001 to 1.0 ±0.05Vp-p.

4. Compressor

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1003	TP1002	Digital voltmeter	EE mode

a. Connect the digital voltmeter to TP1002.
b. Adjust VR1003 to DC 1.05 ±0.05V.

5. Deviation

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1008	TP1003	Oscilloscope Colour-bar generator Alignment cassette. (VJ-0113)	EE mode

a. Load the alignment cassette and playback the colour-bar signal.
b. Connect the oscilloscope to TP1003.
c. Playback level confirm so that is 2.0 ±0.1Vp-p.
d. Input a colour-bar signal which contains a 100% white signal.
It is recording and playback.
e. Adjust VR1008 so that is 2.0 ±0.1Vp-p.
At this time, open the video output terminal.

6. Carrier Frequency Setting

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1002	TP1003	Frequency counter	EE mode

a. Input a non-input signal so that the VCR is set to the EE mode.

b. Connect the frequency counter to TP1003.

c. Adjust VR1002 to be 3850 kHz ±50 kHz.

7. White Clip and Dark Clip

Adjustment location	Measurement poin	Measurement equipment	Adjustment condition
VR1006 VR1007	TP1004	Oscilloscope Colour-bar generator	EE mode

a. By means of a signal generator, input a signal containing a large high-frequency component such as a monoscope or Phillips pattern.

b. Connect the oscilloscope to TP1004.

c. Adjust VR1007 so that, supposing that the interval between the sync tip and the white peak is 100%, the interval between the sync tip and the white overshoot becomes 220 ±10%.

d. Adjust VR1006 so that the interval the sync tip and the dark overshooting becomes 65 ±5%.

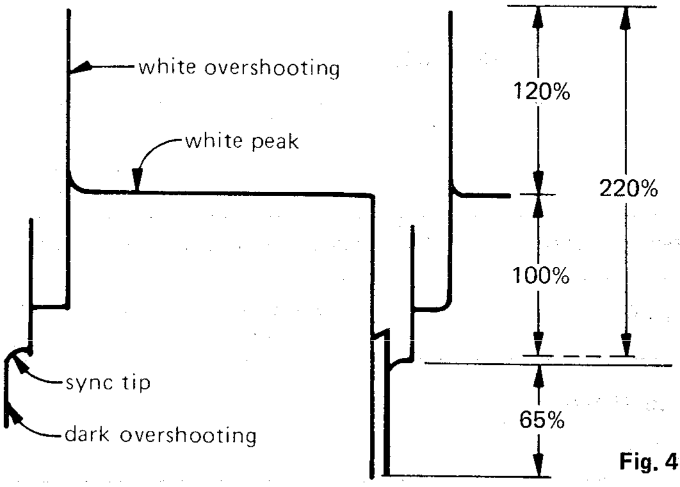


Fig. 4-4-7

8. Y System Comb Noise Canceller

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1011	TP1006	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and playback the colour-bar signal.

b. Connect the oscilloscope to TP1006 and observe the waveform in the H (horizontal) period.

c. Adjust VR1011 so that the video signal is cancelled and only the noise component remains.

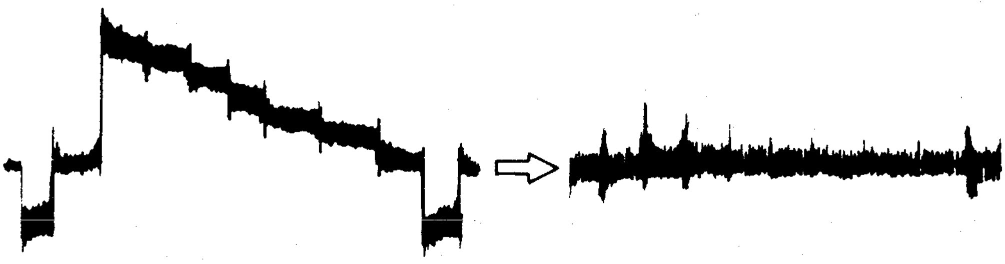


Fig. 4-4-8

9. Expander

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1009	TP1007	Digital voltmeter	PLAY mode

a. Connect the digital voltmeter to TP1007.

b. Adjust VR1009 to DC 1.0 ±0.05V.

10. Playback Level

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1010	TP1005	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and playback the colour-bar signal.

b. Connect the oscilloscope to TP1005.

c. Adjust VR1010 to 2.0 ±0.1Vp-p.

[ADJUSTMENT FOR CHROMA SYSTEM] (Refer to Fig. 4-4-14 VD-1 circuit board)

1. VCO Free Oscillation Frequency

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VC1001	TP1010 TP1011	Frequency counter	PLAY mode

a. Input a non-input signal and the VCR to the PLAY mode.
b. Input DC +6V to TP1010.
c. Connect the frequency counter to TP1011.
d. Adjust VC1001 so that the counter display reads 687.5 ±9 kHz.

2. Reference Oscillation Frequency

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1007	TP1014	Frequency counter	PLAY mode

a. Input a non-input signal and set the VCR to PLAY mode.
b. Connect the frequency counter to TP1014.
c. Adjust T1001 to 4.433619 MHz ±20 Hz.

3. VXO Free Oscillation Frequency

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1008	TP1014	Frequency counter Colour-bar generator	EE mode

a. Input a white (100%) or black (0%) signal. At the time, burst signal is nothing.
b. Connect the capacitor (0.047μF) to pin (37) of IC1005 and GND.
c. Connect the frequency counter to TP1014.
d. Adjust T1008 to 4.433619 MHz ±30 Hz.

4. VXO Free Oscillation Frequency (SP Playback)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1020	TP1025	Frequency counter	EE mode

a. Input a non-input signal.
b. Connect the frequency counter to TP1025.
c. Adjust VR1020 to 15625 ±50 Hz.

5. Burst Tuning

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1006	TP1015	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal, and set the VCR to the EE mode.

b. Connect the oscilloscope to TP1015.

c. Adjust T1006 so that the DC level is maximized.

6. Comb Filter

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1009 VR1016	TP1013 TP1021 (GND)	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal.

b. Connect the oscilloscope to TP1013 and TP1021 (GND).

c. Adjust T1009 and VR1016 alternately so that the chrominance level is reduced to a minimum.

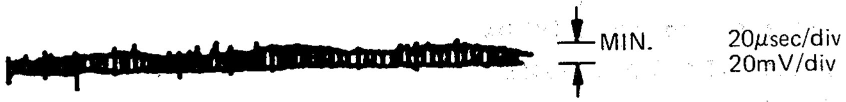


Fig. 4-4-9

7. ACC Setting

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1014	TP1016	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal and connect the oscilloscope to TP1016.

b. Adjust VR1014 so that it is 750 ±30mVp-p.

8. Idler Band Pass Filter (5.12-MHz B.P.F.)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1010 T1011	TP1017	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal.

b. Connect the oscilloscope to TP1017.

c. Alternately adjust T1010 and T1011 so that the waveform becomes a well-shaped sine wave and the amplitude of the waveform is maximized.

9. Carrier Leak Offset

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1012	TP1018	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal and set the VCR to the EE mode.

b. Connect the oscilloscope to TP1018.

c. Adjust VR1012 so that the carrier leak is minimized.

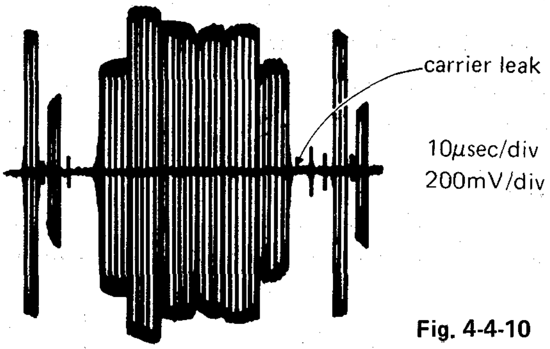


Fig. 4-4-10

10. Chrominance Recording Current

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1015	TP1019	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal and set the VCR to the EE mode.

b. Connect the oscilloscope to TP1019.

c. Adjust VR1015 to 0.35 ±0.05Vp-p.

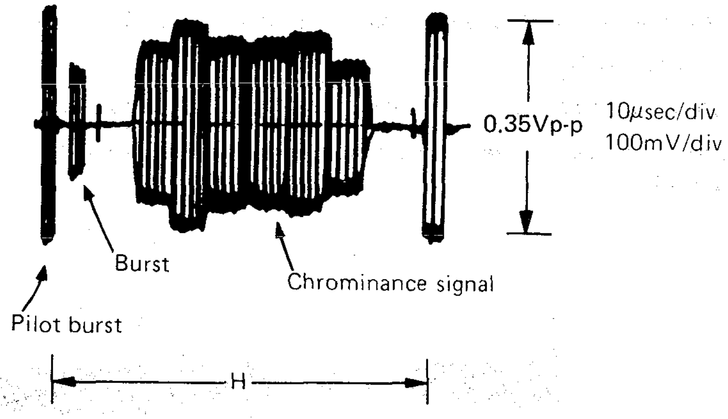


Fig. 4-4-11

11. 1 H Delay in Playback Variations

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1012 VR1021	TP1022 TP1023	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal.

b. Connect channel 1 of the oscilloscope to TP1022.

c. Connect channel 2 of the oscilloscope to center pin to TP1023.

d. Adjust T1012 and VR1021 so that the chrominance signal level decreases to the smallest value.

12. Reinsertion burst width

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1023	TP1016	Oscilloscope Colour-bar generator	EE mode

a. Input the colour bar signal and set pin (1) of IC1009 to "HIGH".

b. Adjust VR1023 so that the burst width of TP1016 becomes $3.5 \pm^{0.5}_{0}$ μs.

13. A P C Offset

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VC1001 VR1017	TP1011	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and playback the colour-bar signal.

b. Connect the oscilloscope to TP1011.

c. Connect the trigger pulse for waveform observation to RF switching pulse point.

d. Adjust VC1001 and VR1018 so that the level difference between the waveform of channel A and that of channel B becomes 0.

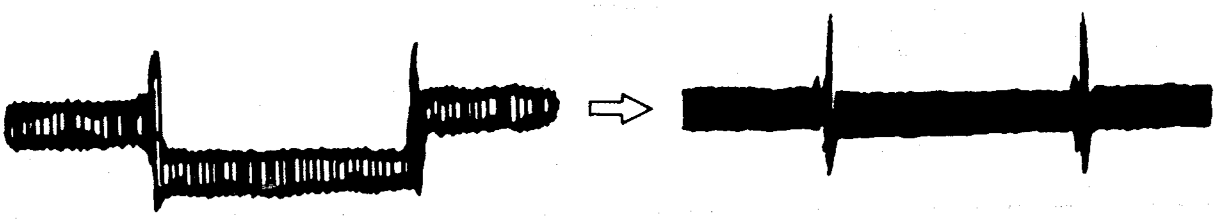


Fig. 4-4-12

14. Phase of the Re-inserted Burst Signal

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1019	TP1016 TP1024	Alignment cassette (VJ-0136) Oscilloscope	PLAY mode

a. This determines the colour bar playback condition and playback variations H.

b. Connect CH1 of the oscilloscope to TP1024, and CH2 to TP1016.

c. While confirming that the amplitude of the chrominance output wave from TP1018 (CH2) is not too small, adjust VR1019 until the wave formation of TP1024 (CH1) becomes small, as shown in the diagram.

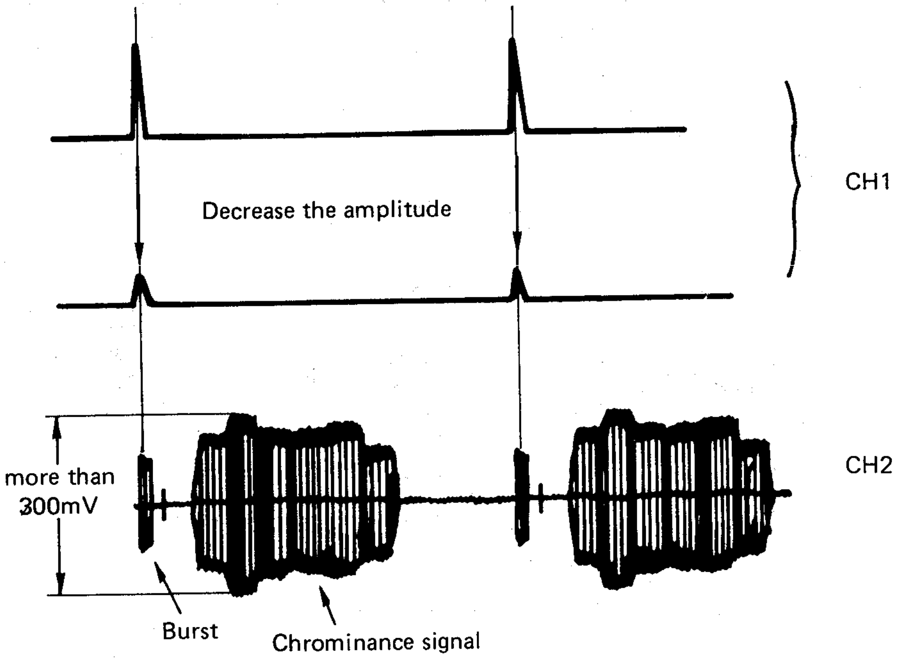


Fig. 4-4-13

15. Amplitude of the Re-inserted Burst Signal

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1018	TP1016	Alignment cassette (VJ-0136) Oscilloscope	PLAY mode

As in the previous section, as playback variations switch between HIGH and LOW, adjust VR1018 until the re-inserted burst of TP1016 (CH2) wave formation is the 75 ±5% level as the true burst.

16. Burst Phase Detection Range

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1022	———	———	PLAY mode

a. Watch the playback image during PICTURE SEARCH, and adjust VR1022 until the colour is normal and there is no colour skip in sections outside of the noise bars.
b. Set the control to the middle position between the normal limits.

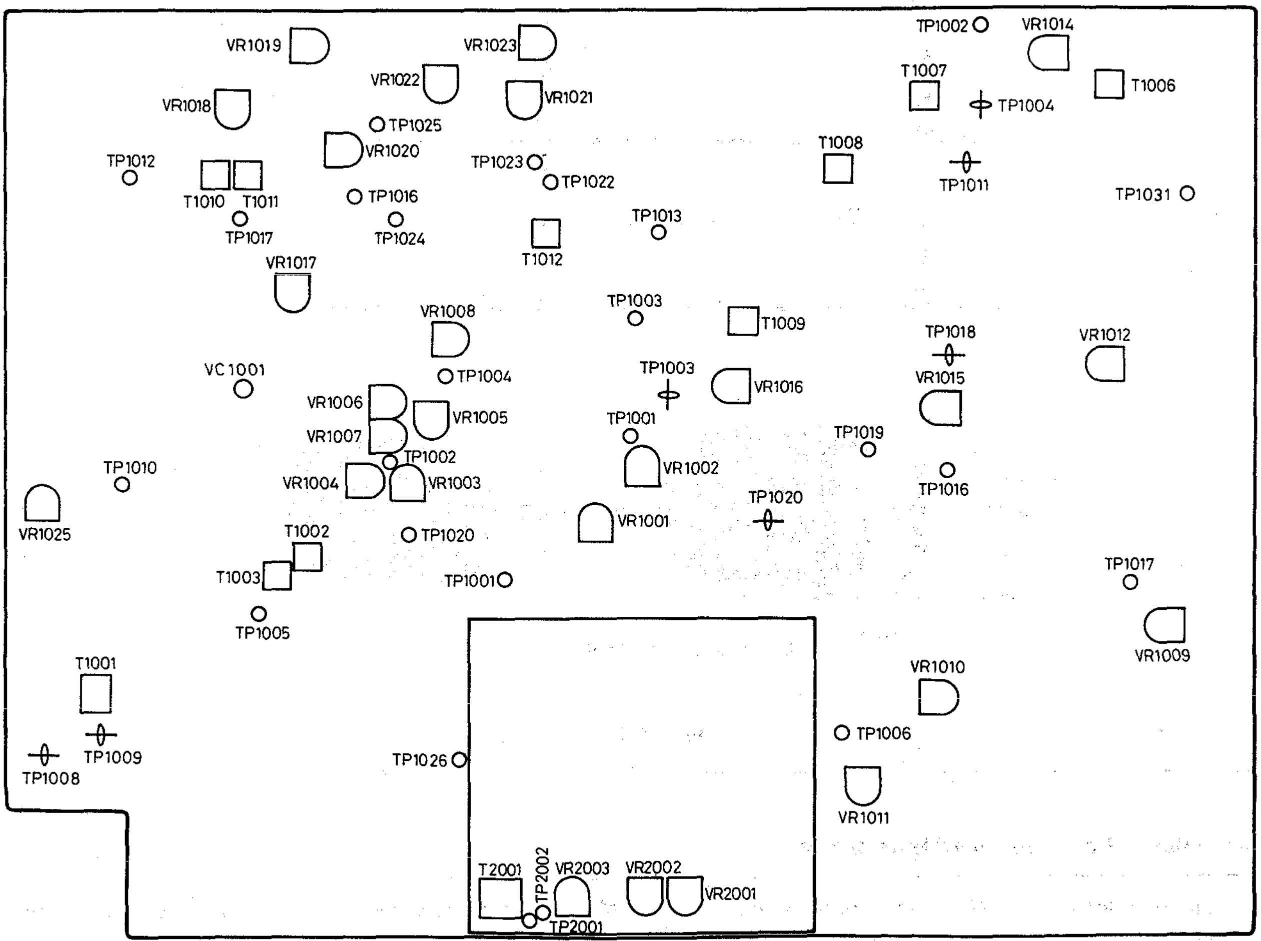

VR1019
VR1023
TP1002
VR1014
VR1022
VR1021
T1007
T1006
VR1018
TP1025
TP1004
VR1020
TP1012
TP1023
T1008
TP1011
TP1022
T1010
T1011
TP1016
TP1031
TP1013
TP1017
TP1024
T1012
VR1017
VR1008
TP1003
T1009
TP1018
VR1012
VC1001
TP1004
TP1003
VR1016
VR1015
VR1006
VR1005
TP1001
VR1007
TP1019
TP1002
TP1010
VR1004
VR1003
VR1002
TP1016
TP1020
VR1025
T1002
TP1020
VR1001
TP1017
T1003
TP1001
TP1005
VR1009
T1001
VR1010
TP1006
TP1009
TP1026
TP1008
VR1011
TP2002
T2001
VR2003
VR2002
VR2001
TP2001

Fig. 4-4-14 VD-1 Circuit board (Video and Audio)

E. AUDIO CIRCUIT (VD-1 CIRCUIT BOARD) (Refer to Fig. 4-4-14.)

1. Bias Current

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR2003	TP3801 (hot) TP3802 (earth)	Vacuum-tube voltmeter Video cassette	REC mode

a. Load a video cassette, and then set the VCR to the REC mode with no signal. (The input signal can be cut out by simply connecting a blank plug to the audio input terminal.)

b. Connect the vacuum-tube voltmeter to TP3802 (earth) and TP3801 (hot) of the MC-8 circuit board.

c. Adjust VR2003 to 17mV (170μA).

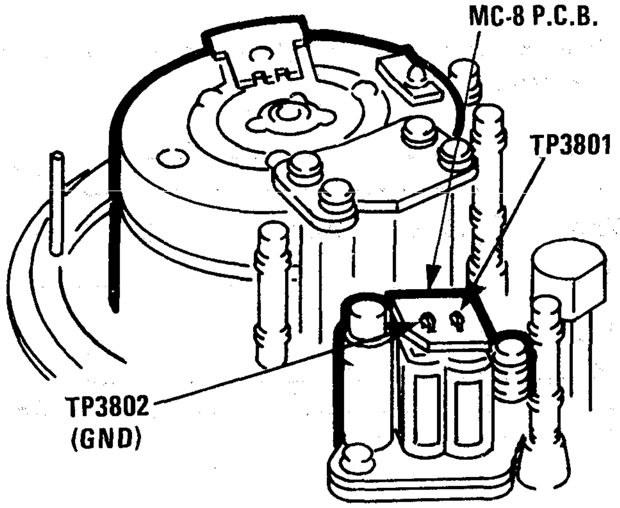


Fig. 4-5-1

2. Recording Current

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR2001	TP3801 (hot) TP3802 (earth)	Vacuum-tube voltmeter Audio frequency oscillator Video cassette	REC mode

a. Load a video cassette, and then set the VCR to the REC mode.

b. Short circuit base of TP2001 and TP2002 of the VD-1 circuit baord (audio circuit) so that oscillation is stopped.

c. Connect the audio frequency oscillator to the audio input terminal of the VCR, and set the output of the oscillator to 1 kHz,–10dBm (0.25Vrms).

d. Connect the vacuum-tube voltmeter to TP3802 (earth) and TP3801 (hot) of the MC-8 circuit board.

e. Adjust VR2001 so that the recording current is 30μArms (3.0 mV).

3. Playback Equalizer and Overall Frequency Response

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
—	Audio output terminal	Oscilloscope Audio frequency oscillator Video cassette	REC mode PLAY mode

a. Load a video cassette, and then set the VCR to the REC mode.

b. Connect the audio frequency oscillator to the audio input terminal of the VCR and set the oscillator output to 333 Hz, –40dBm.

c. Record the 333-Hz signal for approximately 10 seconds. In the same manner, record each signal of 50 Hz, 1 kHz, 5 kHz, 6 kHz, and 8 kHz.

d. Connect the oscilloscope to the audio output terminal, and then set the VCR to the PLAY mode.

e. Confirm that the otuput for 50 Hz, 333 Hz, 1 kHz, 5 kHz, 6 kHz, and 8 kHz are all within the standard values given below.

Note: When varying from this level, there is a malfunction in either a circuit or in the tape travel somewhere, please check.

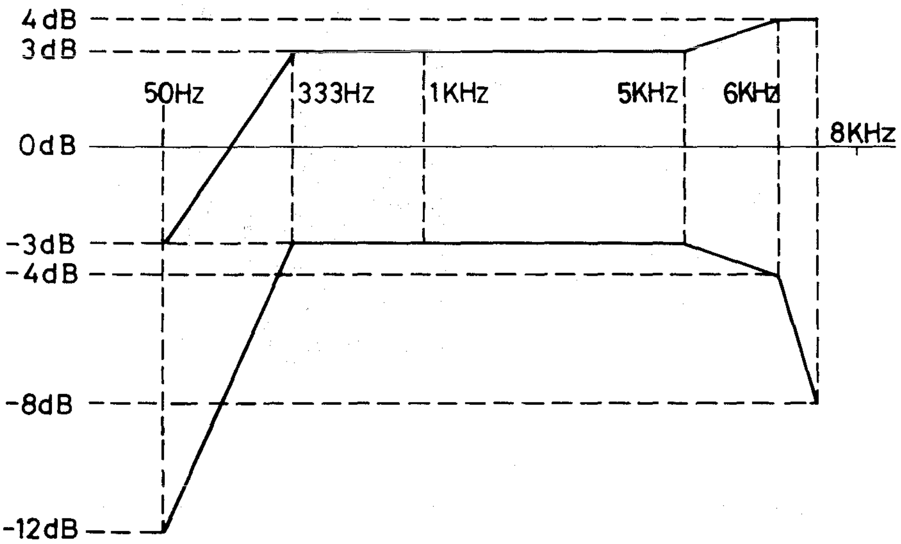


Fig. 4-5-2

4. Recording and Playback Output Levels

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR2002	AUDIO OUT	Vacuum-tube voltmeter Audio frequency oscillator Video cassette	REC mode PLAY mode

a. Load a cassette, and then set the VCR to the REC mode.

b. Connect the audio frequency oscillator to the audio input terminal of the VCR and set the oscillator output to 1 kHz,-10dBm.

c. Connect the vacuum-tube voltmeter to the audio output terminal, wait until the EE mode output stabilizes, and then change from the REC mode to the PLAY mode.

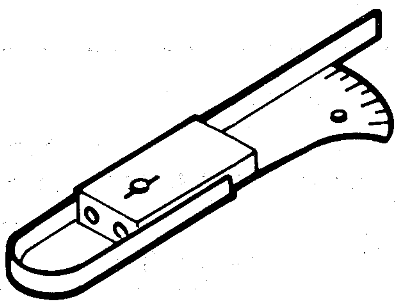
d. Adjust VR2002 so that the playback output is equivalent to that of the EE mode.

V. MECHANISM ADJUSTMENTS

A. JIGS AND TOOLS FOR ADJUSTMENT

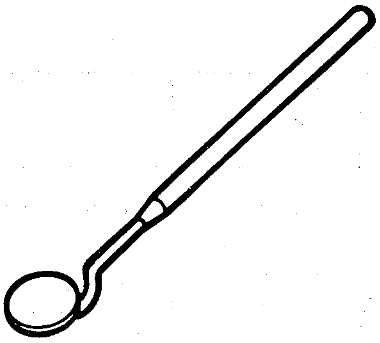
No.	Names	Jig. No.	Remarks
1	Spring tension gauge (100 gram)	VJ-0012	Measurement for FWD (PLAY), R-SEARCH take-up torque
2	Spring tension gauge (500 gram)	VJ-0014	Measurement for F FWD, REW take-up torque
3	Inspection mirror	VJ-0015	Tape path alignment
4	Eccentric screwdriver	VJ-0017	Tape path alignment
5	Hexagonal wrench (M3)	VJ-0022	Adjustment of back tension guide
6	Tension gauge for reel	VJ-0038	Measurement for all winding torque
7	Alignment tape	VJ-0113	Tape path alignment
8	Cassette stand plate gauge	VJ-0105	Adjustment of reel height
9	Hexagonal wrench (M2.6)	VJ-0108	Installation of reel motor pulley
10	Grip ring pincher	VJ-0109	For attaching/detaching grip ring
11	Position adjustment gauge	VJ-0120	Adjustment of back tension guide
12	Checker adjustment gauge	VJ-0121	Adjustment of back tension guide

VJ-0012
VJ-0014



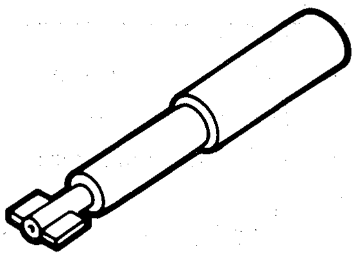
No. 1, No. 2

VJ-0015



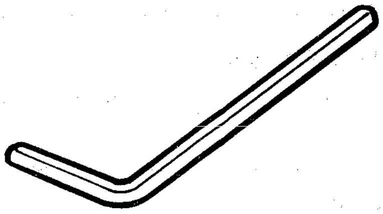
No. 3

VJ-0017



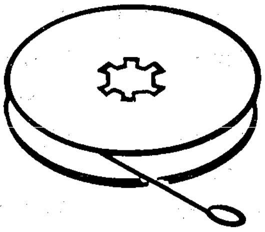
No. 4

VJ-0022



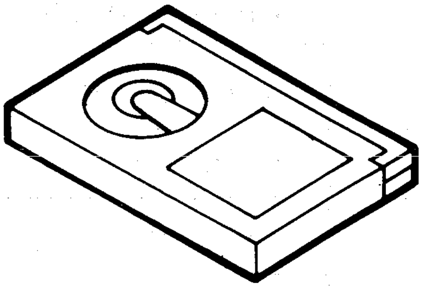
No. 5

VJ-0038



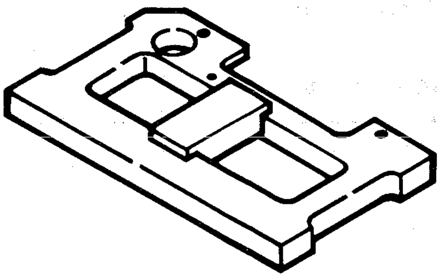
No. 6

VJ-0113



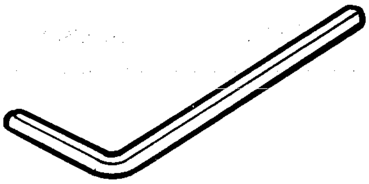
No. 7

VJ-0105



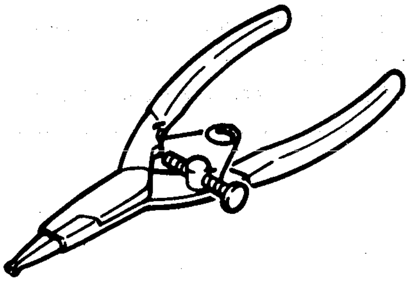
No. 8

VJ-0108



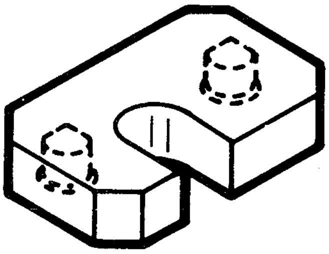
No. 9

VJ-0109



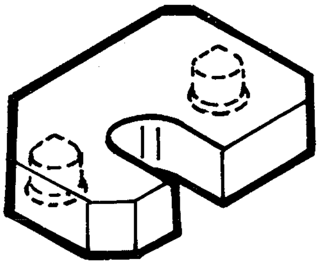
No. 10

VJ-0120



No. 11

VJ-0121



No. 12

B. PREPARATIONS FOR ADJUSTMENTS

1. REMOVAL OF THE CASSETTE COVER

Remove the cassette cover as explained in section IV. CABINET DISASSEMBLY.

2. REMOVAL OF THE CASSETTE HOLDER (See Fig. 7-2-1.)

(1) Detach the E-rings from the left and right cassette holder links and disconnect the links from the cassette holder.

(2) Remove the spring which is attached to the cassette holder and the right link.

(3) Bring the cassette holder down in the direction of arrow A, and separate the groove in the cassette holder from the left-to-right clearance adjusting screw.

(4) Slide the cassette holder to the left, and detach the cassette holder shaft from the right cassette stand.

(5) Slant the cassette holder to the right, detach the cassette holder shaft from the left cassette stand, and remove the cassette holder.

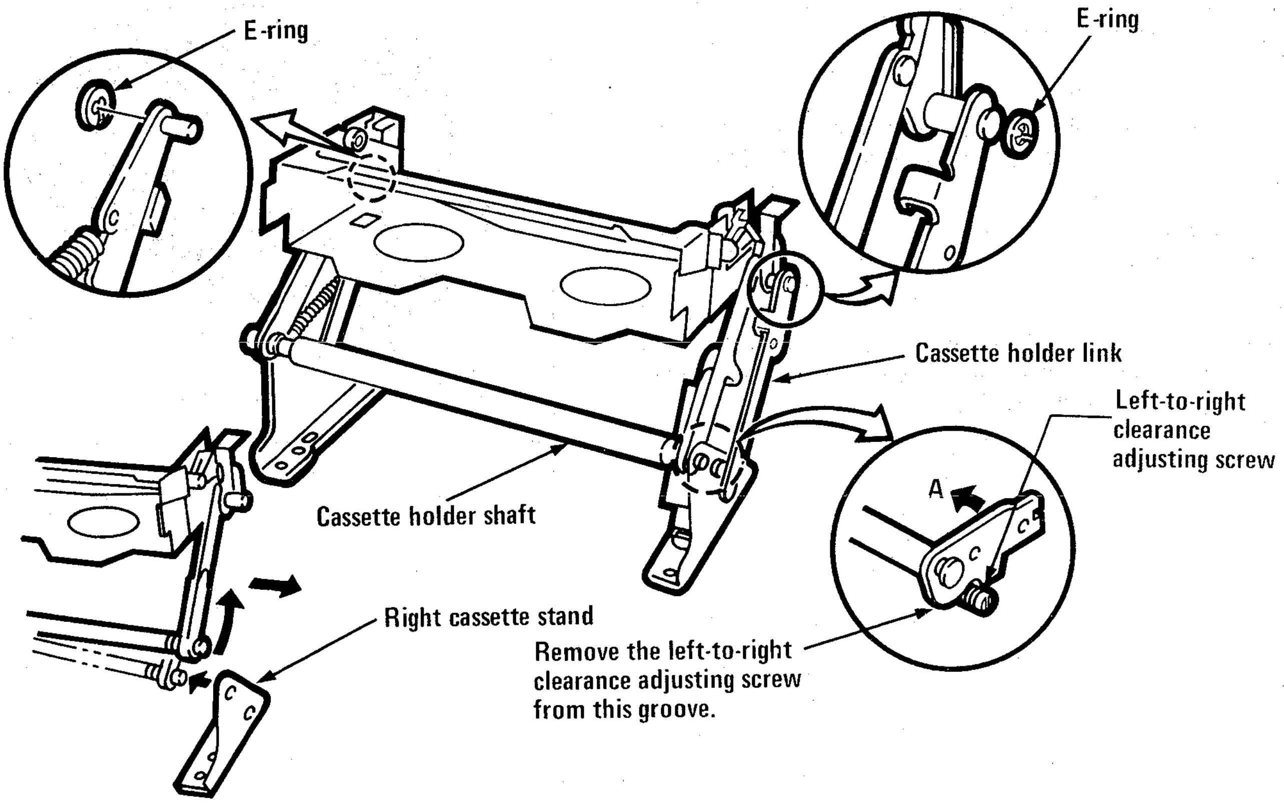

E-ring
E-ring
Cassette holder link
Left-to-right clearance adjusting screw
A
Cassette holder shaft
Right cassette stand
Remove the left-to-right clearance adjusting screw from this groove.

Fig. 7-2-1

[Notes regarding installation] (See Fig. 7-2-2.)

Installation can be done by carrying out items 1 ~ 3 of the removal procedure in reverse order; however, note the following:

(1) Be sure that the groove in the cassette holder is firmly seated on the left-to-right clearance adjusting screw. (See Fig. 7-2-2.)

(2) Do not loosen the left-to-right clearance adjusting screw or the securing screws of the right cassette holder link.

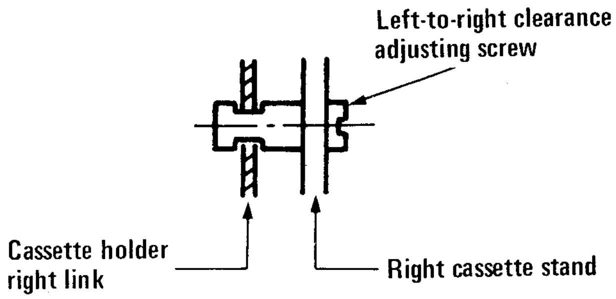

Left-to-right clearance adjusting screw
Cassette holder right link
Right cassette stand

Fig. 7-2-2

3. OPERATION OF THE VCR ONCE THE CASSETTE HOLDER HAS BEEN REMOVED (See Figs. 7-2-3, 7-2-4.)

(1) Turn on the power.

(2) While pressing the cassette holder lock lever in the direction of arrow A, press the cassette detection slide in the direction of arrow B.

(3) The mode will change in accordance with the operation button which is pressed.

(4) In both the REW and R-SEARCH modes, the safety mechanism will function if the take-up reel base does not rotate, therefore, manually rotate the take-up reel base clockwise (direction C). (See Fig. 7-2-4.)

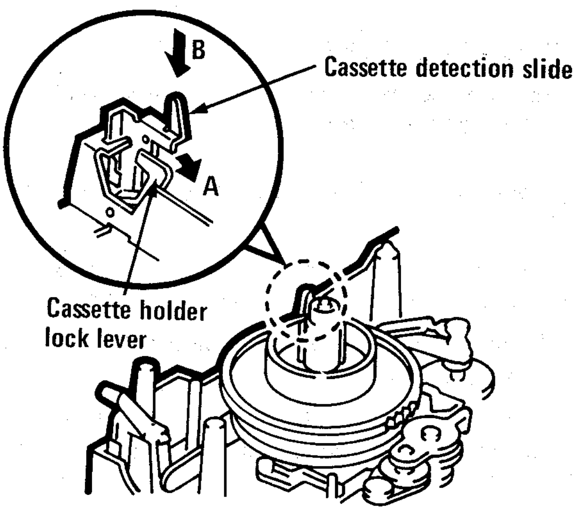

B
A
Cassette detection slide
Cassette holder lock lever

Fig. 7-2-3

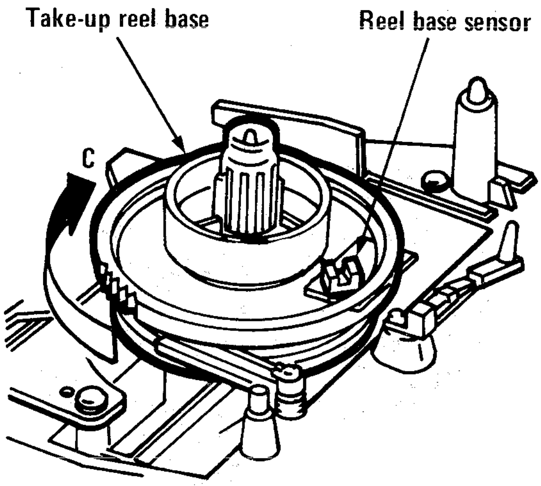

Take-up reel base
Reel base sensor
C

Fig. 7-2-4

[Manual rotation of the loading ring] **(See Figs. 7-2-5, 7-2-6, 7-2-7.)**

(1) To load, manually rotate the loading motor pulley in the direction of arrow D, and the loading ring will rotate counter clockwise.

(2) At the completion of the loading condition, the loading ring stopper will function to stop the loading ring rotation. (See Fig. 7-2-6.)

(3) To unload, manually rotate the loading motor pulley in the direction of arrow E, and the loading ring will rotate clockwise.

(4) At the completion of the unloading condition, the loading ring stopper will function to stop the loading ring rotation. (See Fig. 7-2-7.)

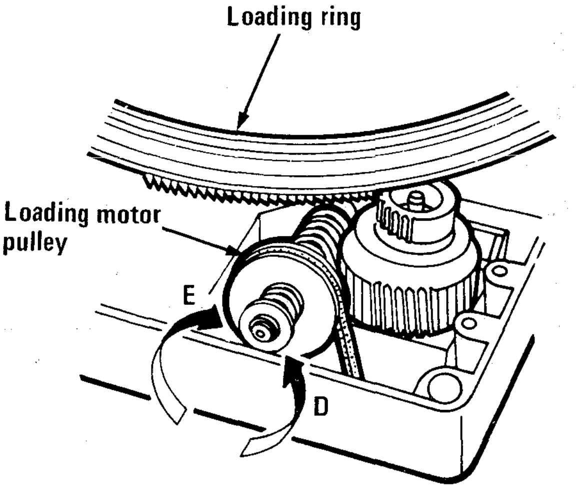

Loading ring
Loading motor pulley
E
D

Fig. 7-2-5

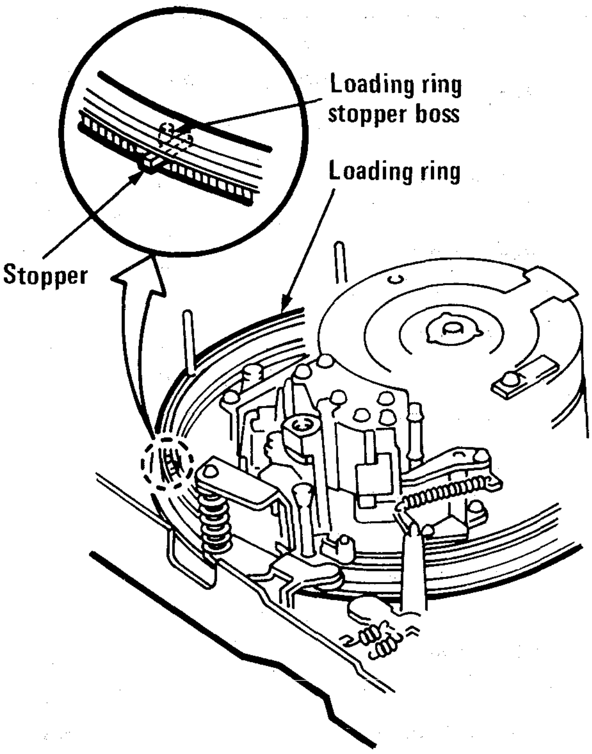

Loading ring stopper boss
Loading ring
Stopper

Fig. 7-2-6

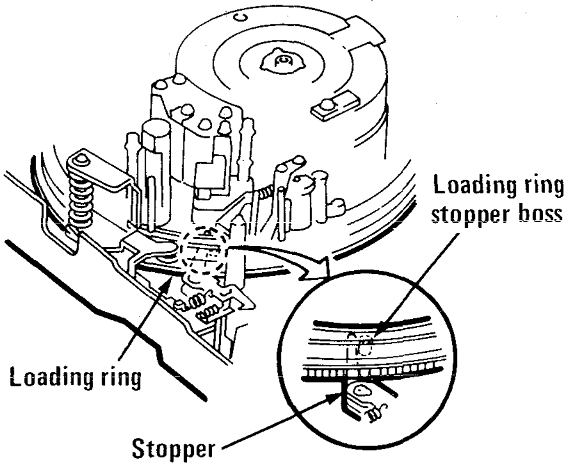

Loading ring stopper boss
Loading ring
Stopper

Fig. 7-2-7

C. MAINTENANCE TIMETABLE

Parts \ Time (Hours)	500	1000	1500	2000	2500	3000	3500	4000	5000
Video head	△	△	△	△	△	△	△	△	△
Audio/control head	△	△	△	△	△	△	△	△	△
Pinch roller	△	△	△	△	△	△	△	△	△
Full erase head	△	△	△	△	△	△	△	△	△
Supply reel base				▲				▲	
Take-up reel base				▲				▲	
PLAY gear		▲		▲		▲		▲	
F FWD/REW roller		▲		▲		▲		▲	
Center gear		▲		▲		▲		▲	

△ Cleaning . . . . . methyl alcohol
▲ Lubrication . . . . specified lubricant

D. MECHANISM REPAIR AND PARTS REPLACEMENT

Before replacing any of the following parts, be sure to turn off the power [set the power switch to the "STAND BY" position or pull out the power cord from the outlet.].

- * Video head drum
- * Video head
- * Audio/control head
- * Full-erase head
- * Micro switches (cassette-in, loading I, loading II, erasure prevention)
- * Reel motor
- * Capstan motor
- * Loading motor
- * Tape end sensors (FWD, REW)
- * DEW sensor
- * Reel base sensor

(Caution)

Be especially sure that the power is off [the power switch is in the "STAND BY" position] when connecting or disconnecting the connectors of the video head drum and of the capstan motor. If one of these connectors is connected or disconnected while the power is on [the power switch is in the "ON" position] the internal ICs will be damaged.

I. VIDEO HEAD (See Fig. 7-4-1.)

1) Turn off the power. [Set the power switch to the 'STAND BY" position.]

2) Move the video head drum to a position at which the video heads are easy to clean.

3) Wipe each head several times with the deerskin part of he head cleaning stick. If the heads are extremely dirty, wipe more times.

Note)

Note that the two video heads are located directly opposite ach other on the video head drum.

Caution)

When pressing a finger on the head cleaning stick to clean he heads, do not press too hard.

Do not move the head cleaning stick up and down against he video heads; doing so will damage the heads.

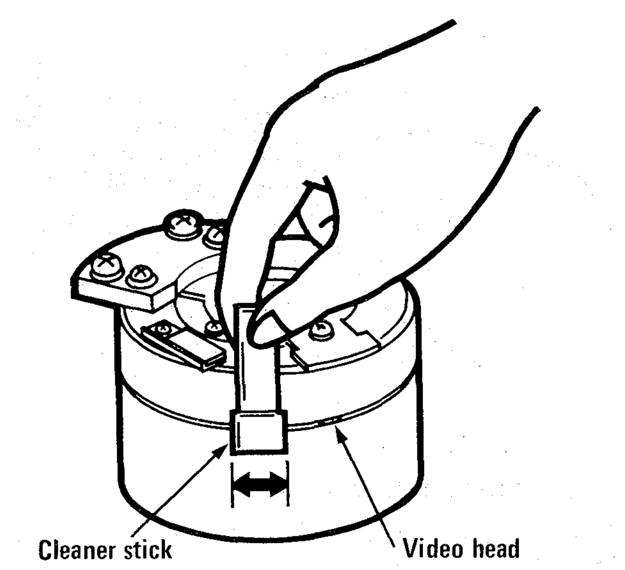


Fig. 7-4-1

2. CLEANING THE AUDIO/CONTROL HEAD AND FULL-ERASE HEAD (See Figs. 7-4-2, 7-4-3.)

Apply alcohol to the cleaning stick, and move the cleaning stick against the heads in the direction of the head gap.

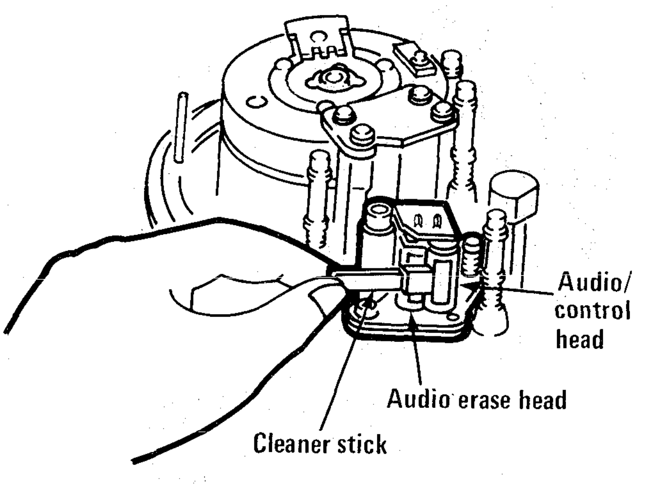


Fig. 7-4-2

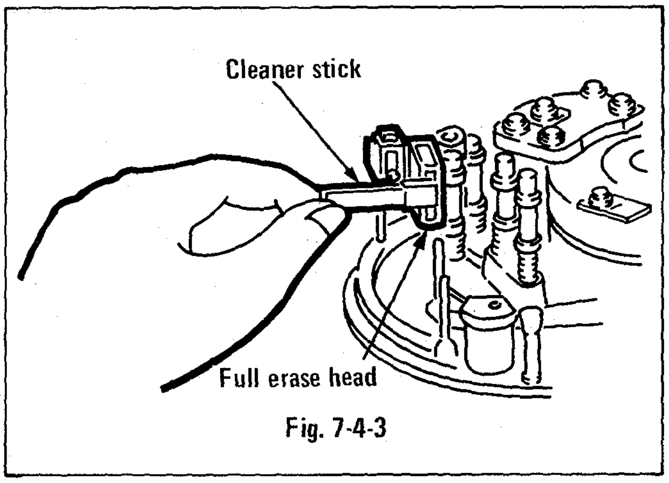

Cleaner stick
Full erase head

Fig. 7-4-3

3. PINCH ROLLER (See Fig. 7-4-4.)

(1) Using a soft cloth moistened with alcohol, clean the surfaces of the pinch roller.

(2) If there are scratches on the pinch roller, remove the E-ring and replace the pinch roller lever assembly.

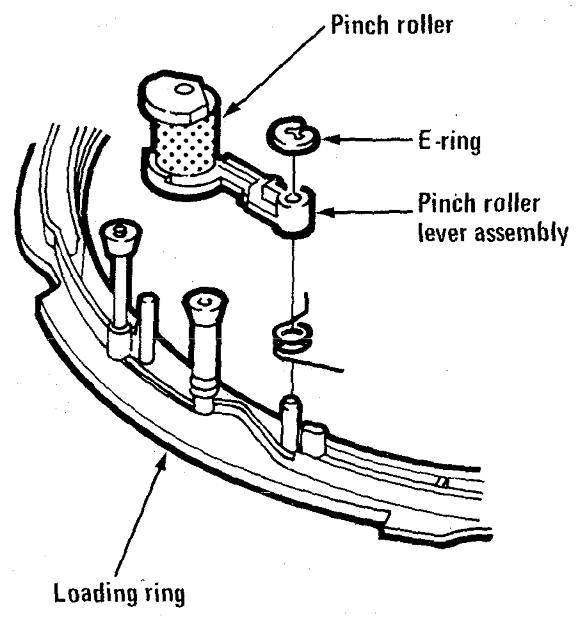

Pinch roller
E-ring
Pinch roller lever assembly
Loading ring

Fig. 7-4-4

4. TAPE PATH

Clean the surfaces of the tape guides and the drum tape path by using a soft cloth or cleaning stick moistened with a alcohol.

(Caution)

When cleaning the drum surfaces, be careful not to contact the video heads.

5. SUPPLY REEL BASE (See Fig. 7-4-5.)

(1) Remove the cassette holder. (Refer to item **"B. PREPARATIONS FOR ADJUSTMENT".**)

(2) Remove the washers holding the supply reel base.

(3) Turn the ratchet brake in the direction of arrow A.

(4) While pressing the mode select slide in the direction of arrow B, remove the supply reel base.

(Caution)

Be careful not to lose the height adjustment spacer.

(5) Wipe off the old oil from the reel shaft by using a cloth moistened with alcohol, and then apply a small amount of new oil.

(6) While pressing the mode select slide in the direction of arrow B, install the supply reel base. If a new supply reel base is being installed, adjust the reel base height. (Refer to item **"E. ADJUSTMENTS, 1. REEL BASE HEIGHT".**)

(7) Mount the washers, and then install the cassette holder.

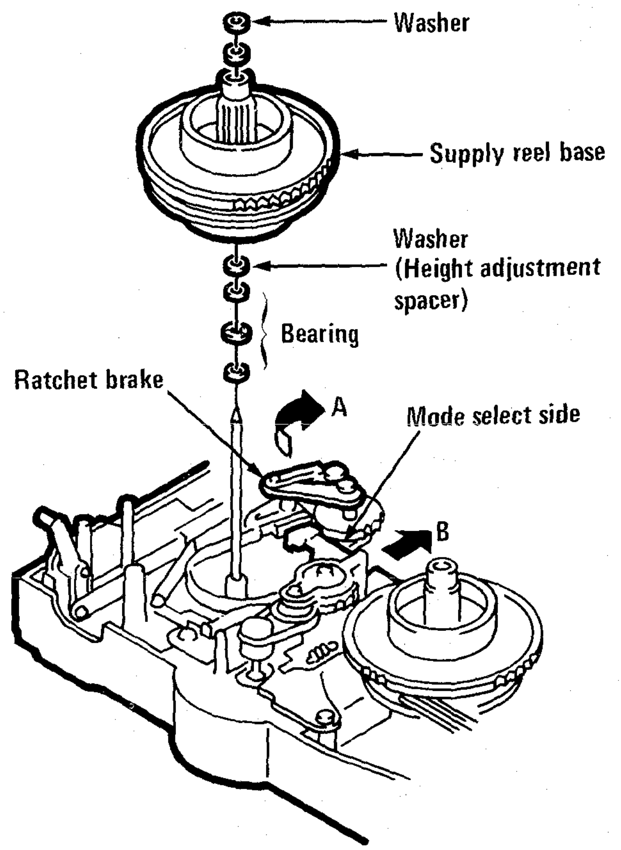

Washer
Supply reel base
Washer
(Height adjustment spacer)
Bearing
Ratchet brake
A
Mode select side
B

Fig. 7-4-5

6. TAKE-UP REEL BASE (See Fig. 7-4-6.)

(1) Remove the cassette holder. (Refer to item **"B. PREPARATIONS FOR ADJUSTMENT"**.)

(2) Remove the washers holding the take-up reel base.

(3) While pressing the mode select slide in the direction of arrow A and the take-up reel soft brake in the direction of arrow B, remove the take-up reel base.

(Caution)

Be careful not to lose the height adjustment spacer.

(4) Wipe off the old oil from the reel shaft by using a cloth moistened with alcohol, and then apply a small amount of new oil.

(5) While pressing the mode select slide in the direction of arrow A and the take-up reel soft brake in the direction of arrow B, install the take-up reel base. If a new take-up reel base is being installed, adjust the reel base height. (Refer to item **"E. ADJUSTMENTS, 1. REEL BASE HEIGHT"**.)

(6) Mount the washers, and then install the cassette holder.

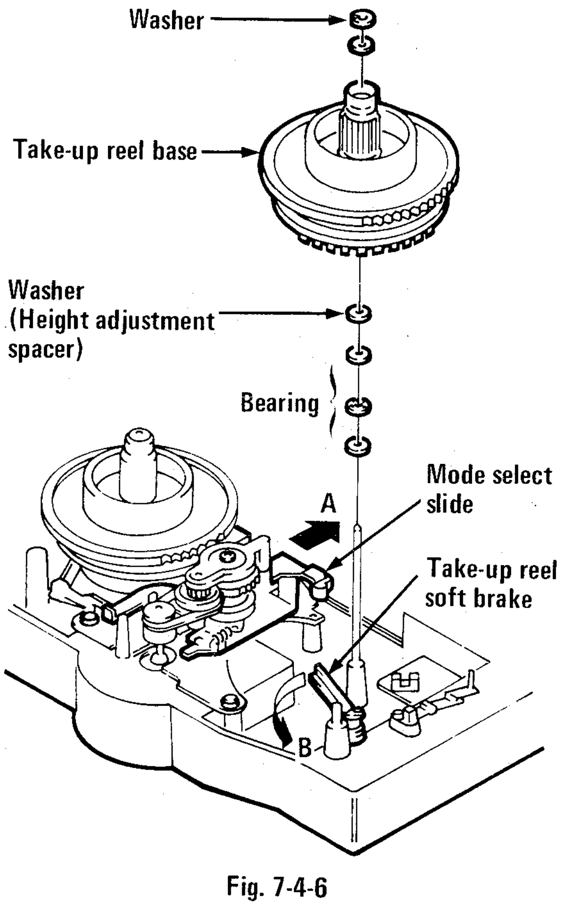


Fig. 7-4-6

7. REEL BASE DRIVE GEAR ASSEMBLY (See Fig. 7-4-7.)

(1) Remove the cassette holder. (Refer to item **"B. PREPARATIONS FOR ADJUSTMENT"**.)

(2) Remove the supply reel base. (Refer to item **"5. SUPPLY REEL BASE"**.)

(3) Remove the take-up reel base. (Refer to item **"6. TAKE-UP REEL BASE"**.)

(4) Remove the screw (a) which secures the ratchet brake, and then remove the brake.

(5) Remove the reel motor belt.

(6) Remove the screws (b) which secure the reel base drive gear assembly, and then remove the assembly.

(7) Remove the E-ring, and then remove the center gear and the F FWD/REW lever. Next, remove the washers, and then remove the play gear and the F FWD/REW roller.

(8) Clean the support shaft of the F FWD/REW lever, center gear, and play lever, and also the shaft of the F FWD/REW roller and play gear by using a cloth moistened with alcohol, and then apply a small amount of new oil.

(9) Install the play gear, the F FWD/REW roller, the play lever, the center gear, and the F FWD/REW lever by reversing the removal procedure.

(10) Install the reel base drive gear assembly. The prong on the end of the mode select slide should fit into the hole in the mode select lever.

(11) Install the reel motor belt.

(Caution)

Be sure that the belt is not twisted, and be careful that oil does not get on the belt.

(12) Install the ratchet brake. Part A of the ratchet brake should be in contact with the wire of the mode select lever.

(13) Install the supply reel base, the take-up reel base, and the cassette holder.

(Caution)

The reel base drive gear assembly should be disassembled for cleaning and lubrication only.

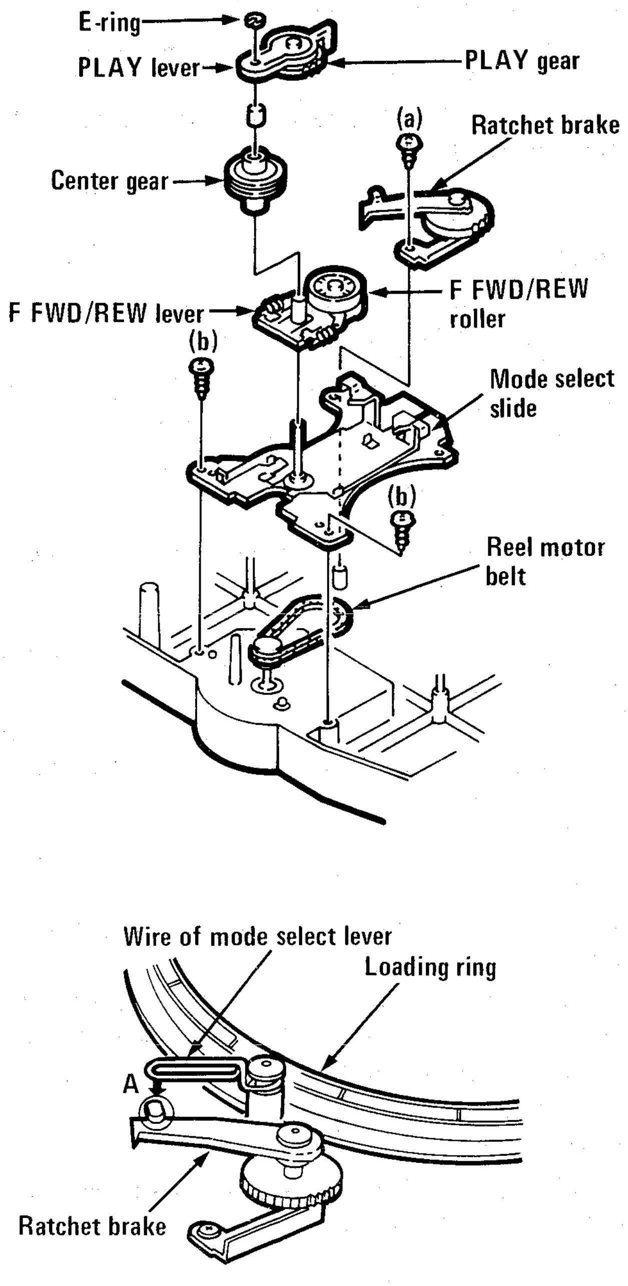

E-ring
PLAY lever
PLAY gear
(a)
Ratchet brake
Center gear
F FWD/REW lever
(b)
F FWD/REW roller
Mode select slide
(b)
Reel motor belt
Wire of mode select lever
Loading ring
A
Ratchet brake

Fig. 7-4-7

8. BACK TENSION BRAKE BAND (See Fig. 7-4-8.)

(1) Remove the cassette holder. (Refer to item **"B. PREPARATIONS FOR ADJUSTMENT"**.)

(2) Remove the supply reel base. (Refer to item **"5. SUPPLY REEL BASE"**.)

(3) Remove the reel base drive gear assembly. (Refer to item **"7. REEL BASE DRIVE GEAR ASSEMBLY"**.)

(4) Disconnect the brake band lever from the back tension lever.

(5) Remove the screw (a) which holds the brake band bracket.

(6) Remove the back tension brake band by passing the brake band lever under the loading ring.

(7) Install the new brake band by reversing the removal procedure.

(Caution)

Be careful not to crease or scratch the new brake band.

(8) Install the reel base drive gear assembly.

(9) Install the supply reel base.

(10) Adjust the position of the back tension lever. (Refer to item **"E. ADJUSTMENTS, 1. REEL BASE HEIGHT"**.)

(11) Install the cassette holder.

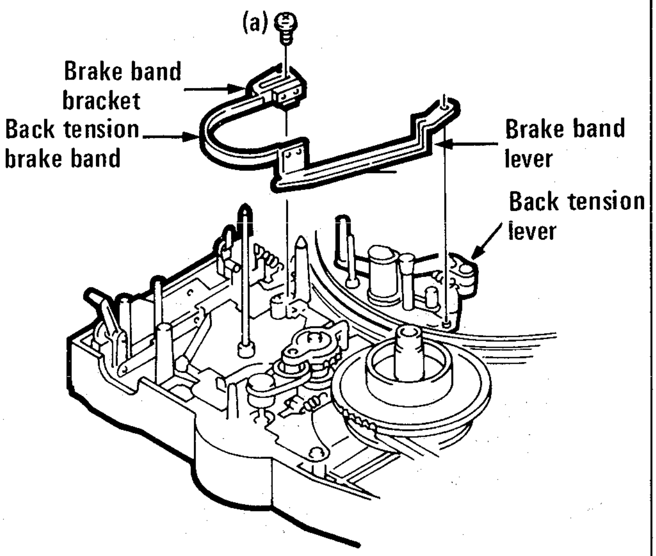

(a)
Brake band bracket
Back tension brake band
Brake band lever
Back tension lever

Fig. 7-4-8

9. AUDIO/CONTROL HEAD (See Fig. 7-4-9.)

(1) Remove the screws (a, b) which hold the audio/control head assembly, and then remove the soldered lead wire.

(2) Install the new audio/control head assembly.

(Caution)

Be careful to solder the lead wire at the correct position.

(3) Adjust the tape path. (Refer to item **"F. TAPE PATH ADJUSTMENTS"**.)

(Note)

Play the service alignment tape (VJ-0061) or a previously recorded tape; if the playback is normal, adjustment is not necessary.

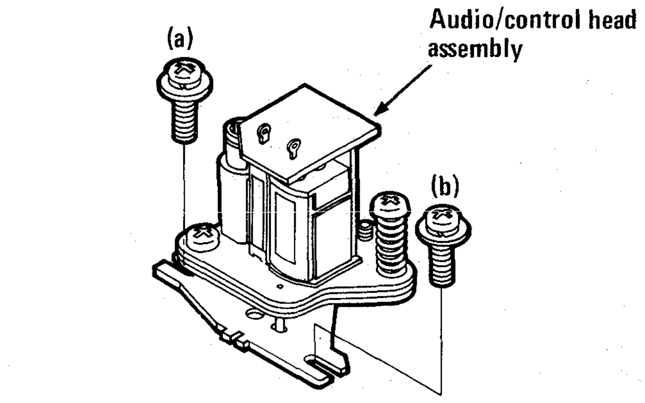


Fig. 7-4-9

10. FWD SENSOR (See Fig. 7-4-10.)

(1) Remove the lead wire soldered to the FWD sensor.

(2) While pressing part A of the FWD sensor in the direction of the arrow, remove the sensor by lifting it upward.

(3) Install the new FWD sensor.

(4) When doing the installation, fit the hole (B) of the FWD sensor onto the prong (C) of the bracket head, and press downward.

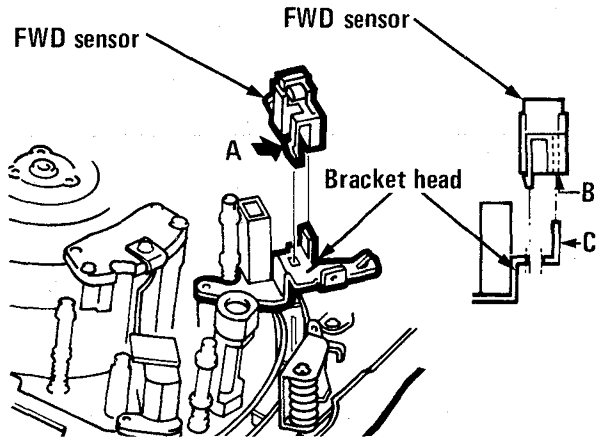


Fig. 7-4-10

11. REW SENSOR (See Fig. 7-4-11.)

(1) Remove the lead wire soldered to the REW sensor.

(2) Remove the screw (a), and then remove the REW sensor assembly.

(3) Remove the screw (b), and remove the capacitor soldered to the REW sensor.

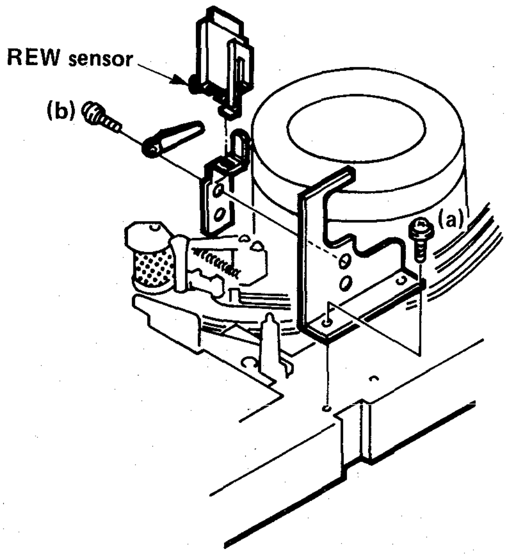


Fig. 7-4-11

12. CAPSTAN MOTOR (See Fig. 7-4-12.)

(1) Remove the bottom circuit board. (Refer to item **"V. CIRCUIT BOARD DISASSEMBLY, 1. BOTTOM CIRCUIT BOARD"**.)

(2) Disconnect the capstan motor connector.

(Caution)

Be sure that the power is off [the power switch is in the "OFF" position] when connecting or disconnecting the connector.

(3) Remove the capstan motor bracket screws (a), and then remove the bracket.

(4) Remove the screws (b) securing the capstan motor, and then remove the motor.

(5) Install the new capstan motor by using the reverse order of the removal procedure.

(6) Adjust the tape path.

(Note)

Play the service alignment tape **(VJ-0113)** or a previously recorded tape; if the playback is normal, adjustment is not necessary.

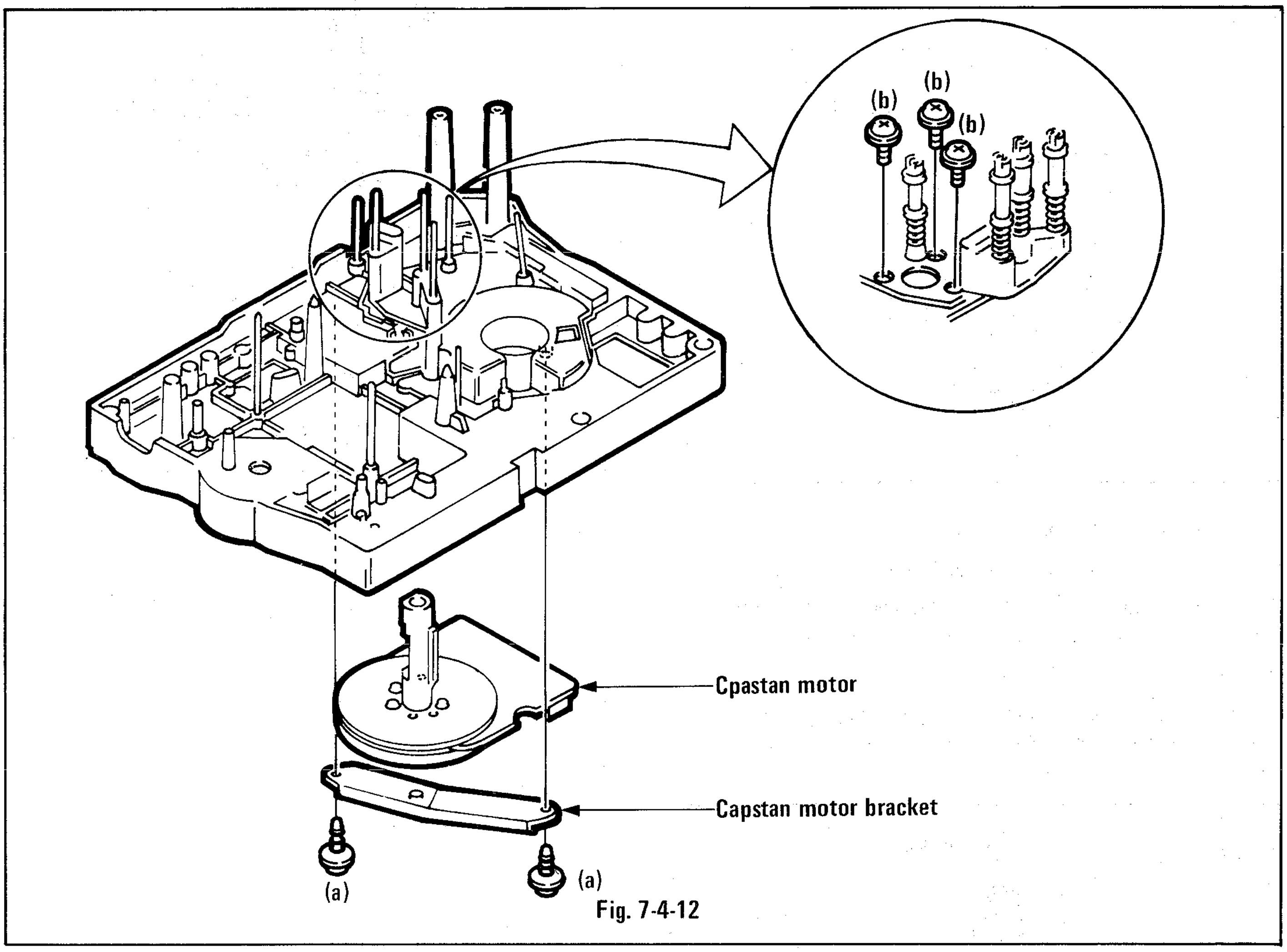


Fig. 7-4-12

13. LOADING MOTOR (See Fig. 7-4-13.)

(1) Remove the bottom circuit board. (Refer to item "**V. CIRCUIT BOARD DISASSEMBLY, 1. BOTTOM CIRCUIT BOARD**".)

(2) Remove the lead wire soldered to the loading motor.

(3) Remove the loading motor bracket screws (a), and then remove the loading motor assembly.

(4) Remove the loading belt.

(5) Remove the screws (b) which secure the loading motor, and then remove the motor.

(6) Loosen the set screw (c) which secures the loading motor pulley by using the Allen wrench (VJ-0108 ... M2.6), and then remove the pulley.

(7) Mount the loading motor pulley to the new loading motor.

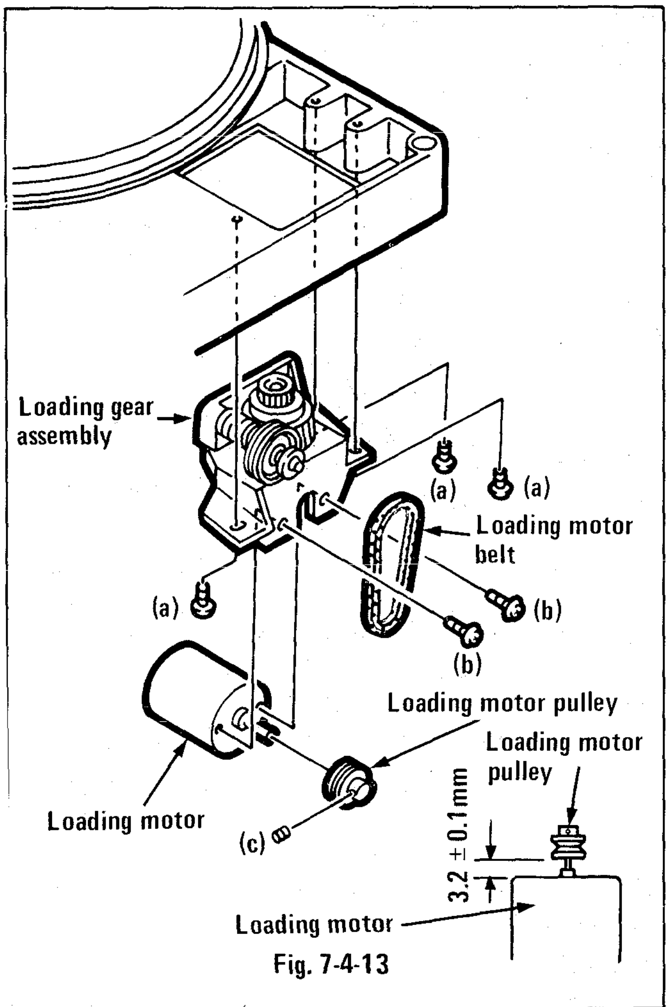


Fig. 7-4-13

(Caution)

When mounting the loading motor pulley, be sure to adjust the height.

(8) Install the loading motor by using the reverse order of the removal procedure.

14. LOADING RING (see Fig. 7-4-14.)

(1) Remove the cassette holder. (Refer to item "**B. PREPARATIONS FOR ADJUSTMENT**".)

(2) Remove the supply reel base. (Refer to item "**5. SUPPLY REEL BASE**".)

(3) Remove the ratchet brake.

(4) Insert the curved tip A of the pressure spring attached to the pinch roller pressure lever into the hole B in the lever.

(5) Cut the fixer securing the lead wire to the bracket head. Remove the solder from the E-head (full-erase head) terminal, and then remove the lead wire. Remove the screw securing the bracket head, and then remove the bracket head.

(6) Remove the REW sensor assembly. (Refer to item "**11. REW SENSOR**".)

(Caution)

It is not necessary to remove the lead wire which is soldered to the REW sensor.

(7) Disconnect the connectors, lead wires, etc.

* The video head lead wire connector (the 6-pin connector which is connected to circuit board VD-1)

* The various lead wire connectors for the audio/control head, the full-erase head, etc.

* The DEW sensor (Do no break the solder on the DEW sensor.)

(8) Remove the bracket screws (a) of the loading ring support rollers, and then remove the bracket.

(9) While pressing the back tension lever in the direction of arrow C and the mode select slide in the direction of arrow D, slide the loading ring upward and remove it.

(Caution)

When pressing the back tension lever, be careful not to press the back tension guide. In addition, be careful not to scratch the video head drum, the video heads, the audio/control head, the back tension guide, etc., and do not touch the loading guide or the pinch roller.

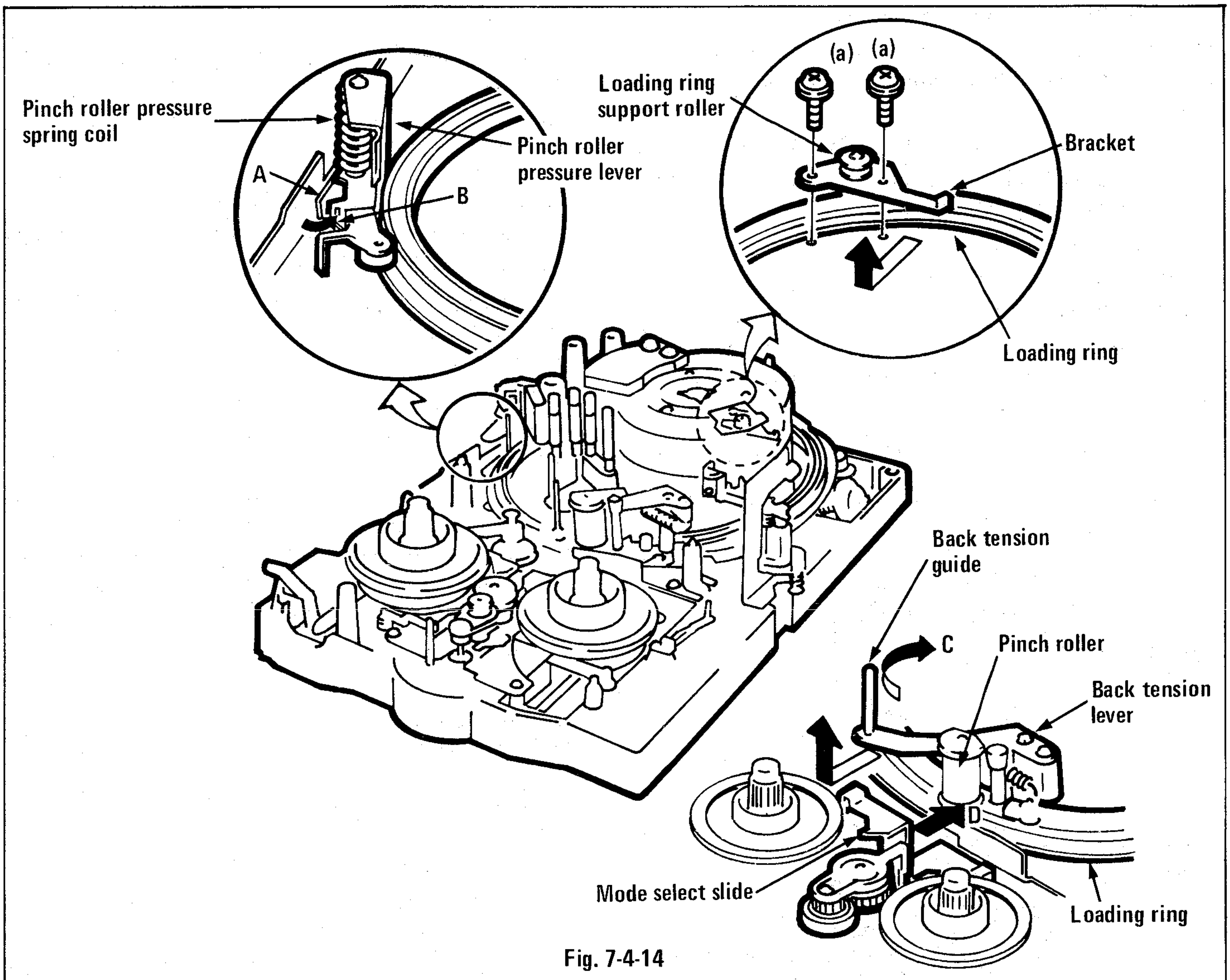

(a) (a)
Pinch roller pressure spring coil
Loading ring support roller
Pinch roller pressure lever
A
B
Bracket
Loading ring
Back tension guide
C
Pinch roller
Back tension lever
D
Mode select slide
Loading ring

Fig. 7-4-14

[Loading ring installation] **(See Figs. 7-4-15, 7-4-16)**

(1) While pressing the back tension lever in the direction of arrow C and the mode select slide in the direction of arrow D, insert the loading ring, and fit it into the grooves of the two support rollers on the secured side.

(Caution)

When pressing the back tension lever, be careful not to press the back tension guide.

(2) Tighten the bracket screws (a) of the loading ring support rollers.

(Caution)

Be sure that the loading ring is set inside the grooves of the support rollers at all three places. Also, be sure that the loading gear and the loading ring gear are securely intermeshed.

(3) Set the loading ring to the condition at the completion of loading.

* Install the bracket head.

* Pass the fixer through the hole in the bracket head, and then bunch and secure the lead wire. Be sure that the lead wire does not hang down, and be careful not to put too much pressure on the bracket head.

* Solder the lead wire to the full-erase head terminal.

(4) Remove the curved tip A of the pinch roller pressure spring from the hole B in the pinch roller pressure lever, and connect it to the wall of the main chassis.

(5) Install the ratchet brake and other parts by reversing the order of the removal procedure.

(Caution)

When the loading ring is in the condition of loading completion, install the REW sensor assembly as shown in Fig. 7-4-16.

(6) Play a previously recorded tape, and check that there is nothing wrong with the tape path.

(Caution)

When installing the loading ring, be careful not to scratch the video head drum, the video heads, the audio/control head, the back tension guide, etc.

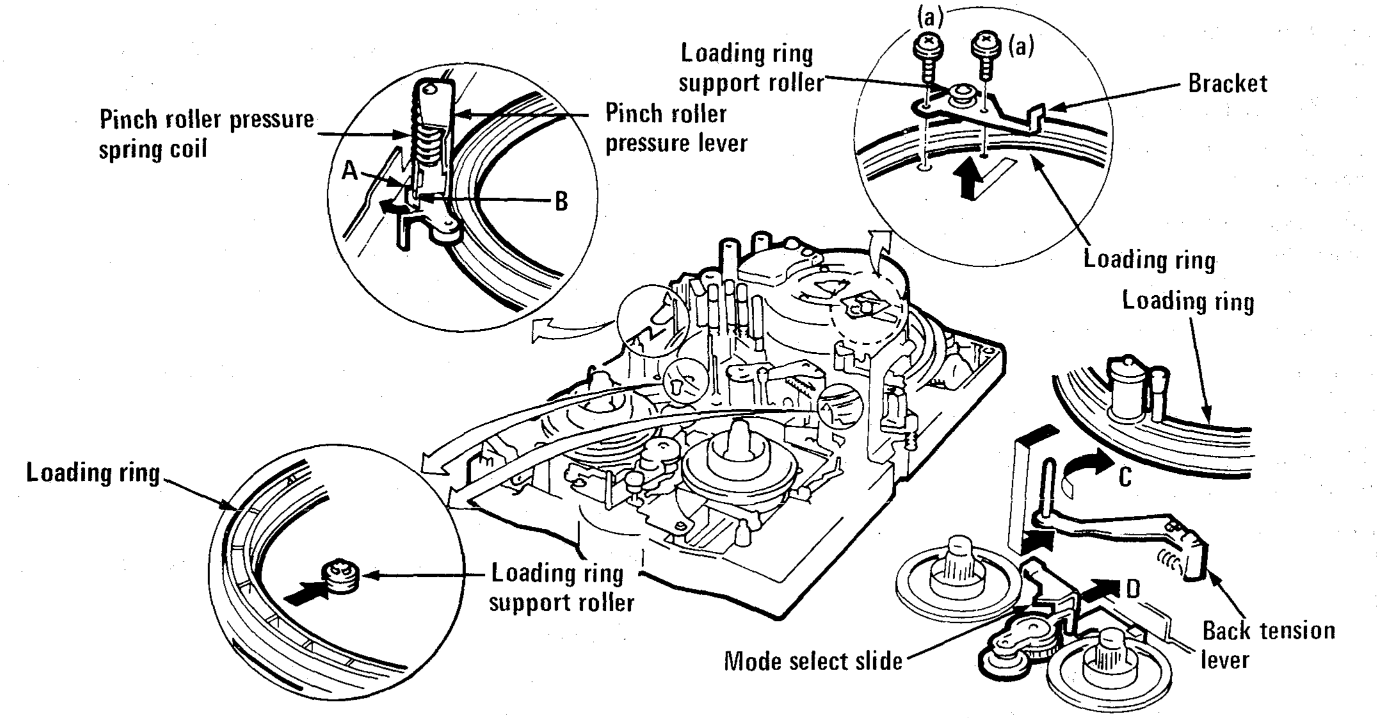

(a)
(a)
Loading ring support roller
Bracket
Pinch roller pressure spring coil
Pinch roller pressure lever
A
B
Loading ring
Loading ring
Loading ring
C
Loading ring support roller
D
Back tension lever
Mode select slide

Fig. 7-4-15

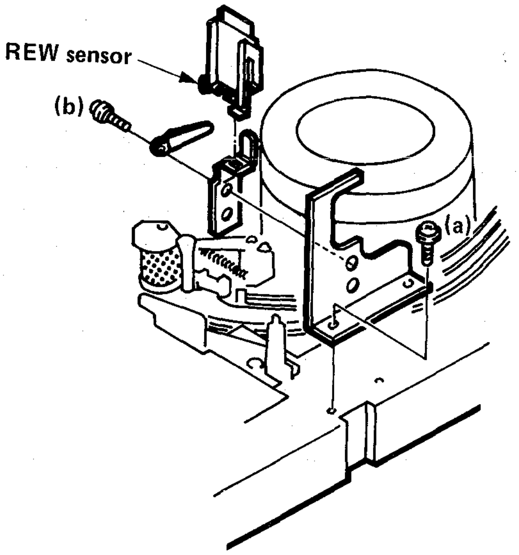

REW sensor
(b)
(a)

Fig. 7-4-16

15. REEL MOTOR (See Fig. 7-4-17.)

(1) Remove the cassette holder. (Refer to item "**B. PREPARATIONS FOR ADJUSTMENT**".)

(2) Remove the botton circuit board. (Refer to item "**E. CIRCUIT BOARD DISASSEMBLY, 1. BOTTOM CIRCUIT BOARD**".)

(3) Remove the lead wire which is soldered to the reel motor.

(4) Remove the reel motor belt.

(5) Remove the reel motor mounting screws (a), and then remove the motor.

(6) Loosen the set screw (b) which secures the reel motor pulley by using the Allen wrench (VJ-0108....M2.6), and then remove the pulley.

(7) Mount the reel motor pulley onto the new motor.

(Caution)

When mounting the pulley, be sure to adjust the height.

(8) Install the reel motor by using the reverse order of the removal procedure.

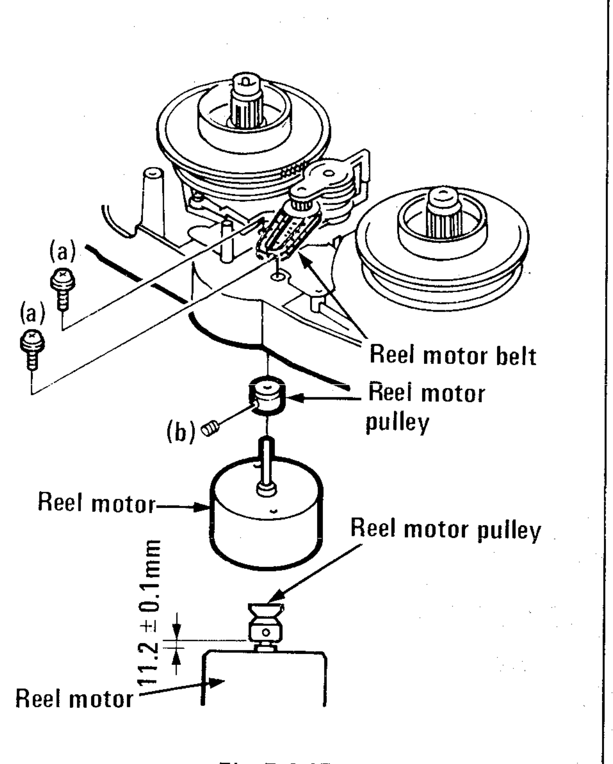


Fig. 7-4-17

16. VIDEO HEAD DISC (See Fig. 7-4-18.)

(1) Remove the solder of the PG lead wire (the lead wir connected to circuit board MC-4 which is part of vide head drum A).

(2) Remove the DEW sensor.

(Caution)

Do not break the solder on the DEW sensor. Also not that the performance of the DEW sensor will be impaire if it is subjected to high temperatures for an extende period of time.

(3) Remove the screws (a), and the, while raising up vide head drum A, loosen the M3 screws (b) by using a Phillip (cross-tip) screwdriver and remove video head drum A.

(4) Remove the screws (c) which secure the rotary transformer.

(5) Break the solder of rotary transformer lead wires (1) (2), (3), and (4), and then remove the transformer.

(Caution)

Make note of the soldered locations for each of the rotary transformer lead wires.

(6) Remove the screws (d) which secure the video hea disc, and then replace the disc.

(Caution)

When installing the new video head disc, pay attention to the following points:

* Tighten each of the screws (d) with an equal amount of torque (6 kg-cm). Do not overtighten them.

* Do not remove the spacer underneath the video head disc. Install the new video head disc right onto the old spacer. (It is possible that there is no spacer.)

* Solder the lead wires in their original positions, and shape them so that they follow along the video head disc and do not come in contact with drum A.

(7) Install the remaining parts by reversing the order of the removal procedure.

(Caution)

The M3 screws (b) determine the position of drum A. Tighten them with a torque of 1 kg or less.

) Play the service alignment tape (VJ-0093) or a previous- recorded tape. If the image is not correct, and a correct nage cannot be obtained by adjusting the tracking control, djust the tape path. (Refer to item **"F. TAPE PATH AD-USTMENTS".)**

) If a slipping noise is head from the video head drum hen the tape is played back, it is probably because the ideo head drum is not installed properly; loosen the screws) and the M3 screws (b) again and adjust drum A.

aution)

the slipping noise is still heard after the adjustment is iade, it indicates that the cause is a different thickness of ie video head disc; turn the gap adjusting screws (e) 30° ~ 0° counter clockwise from the point at which the slipping oise is heard. (Tighten the gap adjusting screws (e) niformly.)

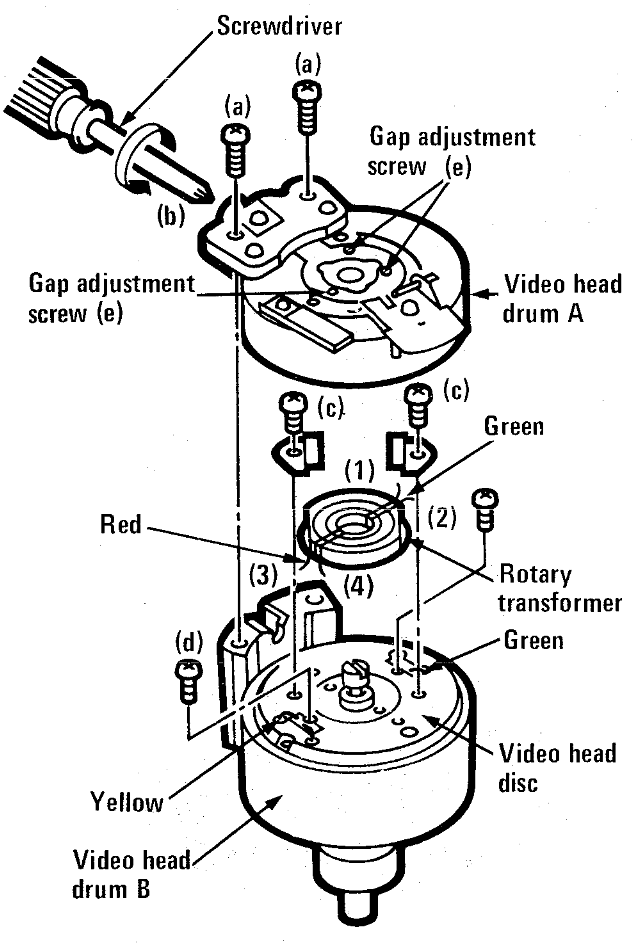

Screwdriver
(a)
(a)
(b)
Gap adjustment screw (e)
Gap adjustment screw (e)
Video head drum A
(c)
(c)
Green
(1)
(2)
Red
(3)
(4)
Rotary transformer
Green
(d)
Video head disc
Yellow
Video head drum B

Fig. 7-4-18

E. ADJUSTMENTS

1. REEL BASE HEIGHT (See Fig. 7-5-1.)

If the reel base height is not correct, the tape inside the cassette will be unevenly wound. When this tape is used again, the unevenly wound tape will cause the tape tension to fluctuate, and the correct tape travel will be impossible to obtain.

(1) Turn off the power. [Set the power switch to the "STAND BY" position.]

(2) Remove the cassette holder. (Refer to item **"B. PREPARATIONS FOR ADJUSTMENT".)**

(3) Insert the standard cassette plate (VJ-0105) and slide the gauge in the direction of the arrows.

(4) Confirm that, when the gauge stops, the reel bases are not in contact with surface A of the plate and are in contact with surface B.

(5) If a reel base is in contact with surface A, remove a spacer and check again.

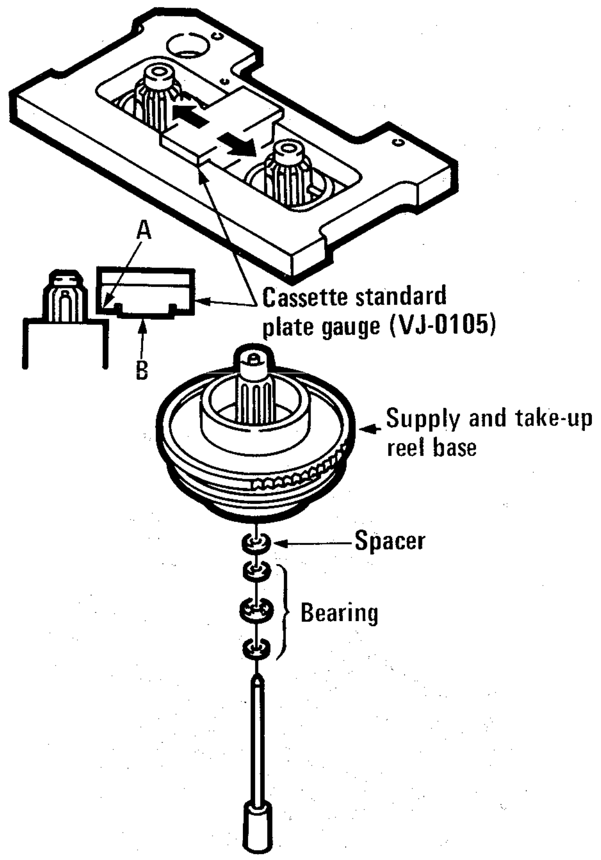

A
B
Cassette standard plate gauge (VJ-0105)
Supply and take-up reel base
Spacer
Bearing

Fig. 7-5-1

(6) If a reel base is not in contact with surface B, add a spacer and check again.

(Note)

Adjust the reel base height by adding or removing spacers (0.13T, 0.25T, 0.5T) as appropriate so that the height meets the specifications. Use the same method for both the take-up reel base and the supply reel base.

2. BACK TENSION LEVER POSITION (See Fig. 7-5-2.)

The back tension must be applied uniformly to the tape so that the tape can travel smoothly with relation to the various heads and tape guides. If the back tension is too strong, it will cause the tape to stretch, and if it is too weak, the tape will separate from the heads and tape guides.

(1) Turn off the power. [Set the power switch to the "STAND BY" position.]

(2) Remove the cassette holder. (Refer to item **"B. PREPARATIONS FOR ADJUSTMENT"**.)

(3) Manually operate the loading ring to reach the condition of loading completion.

(4) Insert the back tension adjustment gauge (VJ-0120) and check the position of the back tension guide.

(5) If the position of the back tension guide is not correct, loosen the screw (a), move the brake band bracket, and adjust the position of the back tension guide.

(6) Tighten the screw (a) to secure the position of the brake band bracket.

(7) Move the loading ring to the condition of unloading completion, and install the cassette holder.

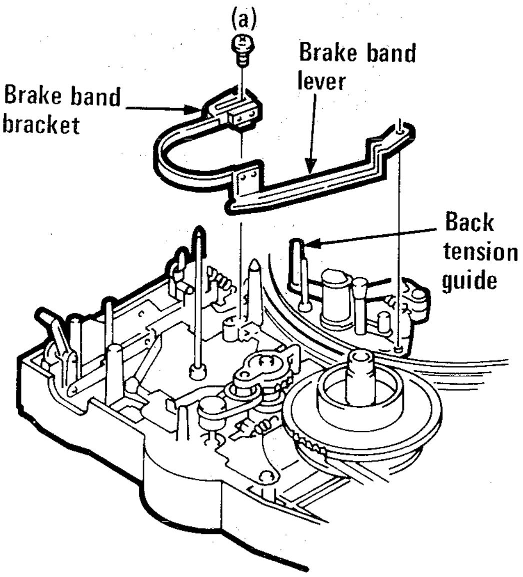


Fig. 7-5-2

3. WINDING TORQUE (See Figs. 7-5-3 ~ 7-5-6.)

In the various modes of the VCR, the tape which leaves the supply (or take-up) reel is wound around the take-up (o supply) reel. If the winding torque is too weak, the tape wil not be wound properly and will become slack. On the othe hand, if the winding torque is too strong, an excessiv amount of tension will be applied to the tape and cause the tape to stretch.

[FWD winding (recording, playback, forward search) torque] (See Fig. 7-5-3.)

(1) Turn off the power. [Set the power switch to the "STAND BY" position.]

(2) Remove the cassette holder. (Refer to item **"B. PRE-PARATIONS FOR ADJUSTMENT"**.)

(3) Turn on the power. [Set the power switch to the "ON" position.]

(4) Mount the reel tension gauge (VJ-0038) on the take-up reel base, and then connect the string to the end of the spring tension gauge (VJ-0012).

(5) Press the PLAY button and measure the torque. The winding torque should be between 30 g and 53 g.

(6) If the measured value is not within the specified value range, replace the take-up reel base.

(7) Install the cassette holder.

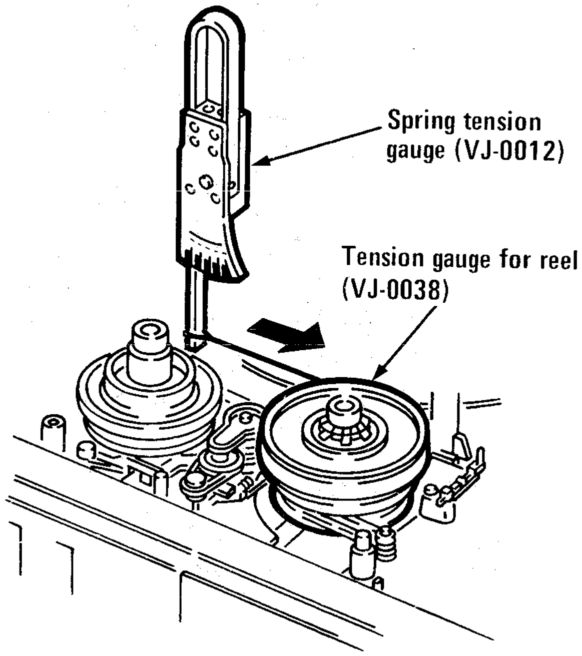

Spring tension gauge (VJ-0012)
Tension gauge for reel (VJ-0038)

Fig. 7-5-3

[illegible]ann
Telefon [illegible] 47 47 1[illegible]
Zentralwerkstatt
2400 Lübeck 1
Fackenburger Allee [illegible]

F FWD winding torque] **(See Fig. 7-5-4.)**

1) Turn off the power. [Set the power switch to the 'STAND BY" position.]

2) Remove the cassette holder. (Refer to item "**B. PRE- ARATIONS FOR ADJUSTMENT**".)

3) Turn on the power. [Set the power switch to the "ON" osition.]

4) Mount the reel tension gauge (VJ-0038) on the take-up eel, and then connect the string to the end of the spring ension gauge (VJ-0014).

5) Press the F FWD button, and measure the torque. The vinding torque should be-165 g or more.

6) If the measured value in less than the specified value, heck for a problem with the reel motor belt, and replace the elt if necessary.

7) Install the cassette holder.

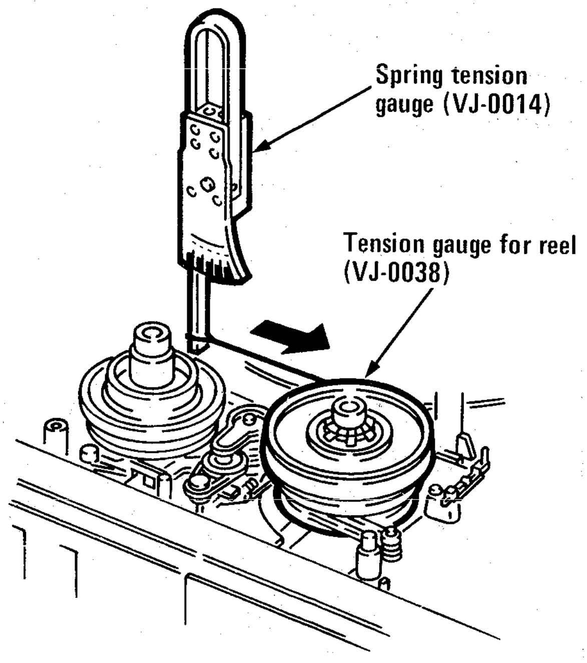

Spring tension gauge (VJ-0014)
Tension gauge for reel (VJ-0038)

Fig. 7-5-4

[REW winding torque] **(See Fig. 7-5-5.)**

(1) Turn off the power. [Set the power switch to the "STAND BY" position.]

(2) Remove the cassette holder. (Refer to item "**B. PREPARATIONS FOR ADJUSTMENT**".)

(3) Turn on the power. [Set the power switch to the "ON" position.]

(4) Mount the reel tension gauge (VJ-0038) on the supply reel, and then connect the string to the tip of the spring tension gauge (VJ-0014).

(5) Press the REW button, and measure the torque. The winding torque should be 165 g or more.

(6) If the measured value is less than the specified value, check for a problem with the reel motor belt, and replace the belt if necessary.

(7) Install the cassette holder.

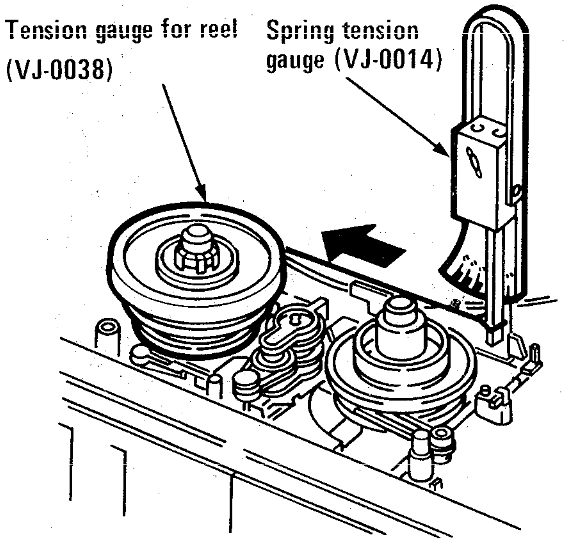

Tension gauge for reel (VJ-0038)
Spring tension gauge (VJ-0014)

Fig. 7-5-5

[R-SEARCH winding torque] (See Fig. 7-5-6.)

(1) Turn off the power. [Set the power switch to the "STAND BY" position.]

(2) Remove the cassette holder. (Refer to item **"B. PREPARATIONS FOR ADJUSTMENT".**)

(3) Turn on the power. [Set the power switch to the "ON" position.]

(4) Mount the reel tension gauge (VJ-0038) on the supply reel, and then connect the string to the end of the spring tension gauge (VJ-0012).

(5) Press the R-SEARCH button, and measure the torque. The winding torque should be between 58 g and 74 g.

(6) If the measured value is not within the specified value range, replace the supply reel base.

(7) Install the cassette holder.

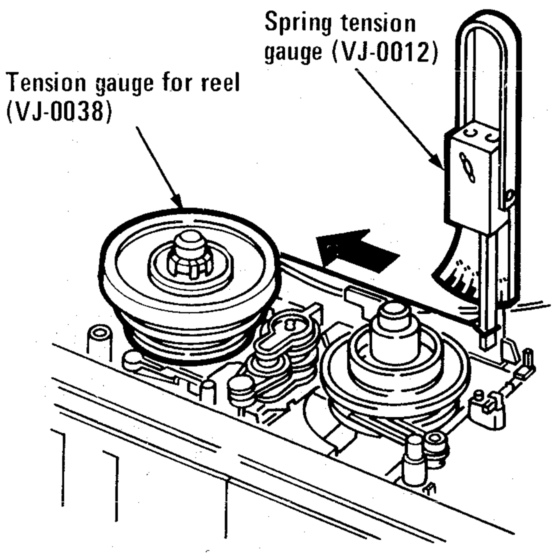

Spring tension gauge (VJ-0012)
Tension gauge for reel (VJ-0038)

Fig. 7-5-6

F. TAPE PATH ADJUSTMENTS

Each of the heads and tape guides has been adjusted to th precisely correct position and height. These parts have a ver strong influence on tape travel, and should normally not b touched. If the video head drum, the full-erase head, th audio/control head, etc., have been replaced, playback th service alignment tape (VJ-0061) or a previously recorde tape, and check the image. Only if there are problems wit the image that cannot be corrected by adjusting the trackin control should tape path adjustments be made. Also not that tape path adjustments should be made without removin the cassette holder.

1. BACK TENSION GUIDE VERTICAL POSITION (Se Fig. 7-6-1.)

(1) Play a tape on which the edges are not stretched, an check that there is no looseness in both the upper and lowe edges of the tape in the area of the back tension guide.

(2) If there is any looseness, adjust the screws (a), (b) s that the tension is applied evenly to the tape.

(Note)

Adjustment for the tape entering the back tension guide (direction A → A') is made by using screw (a), and that fo the tape leaving the back tension guide (direction B → B') by using screw (b).

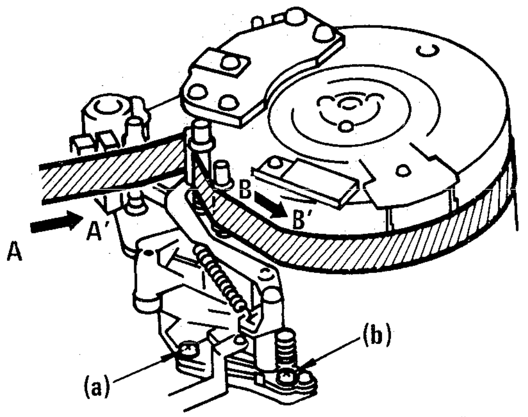


Fig. 7-6-1

2. FULL-ERASE HEAD TAPE GUIDES (See Figs. 7-6-2 ~ 7-6-4.)

(1) Connect an oscilloscope to the video output terminal (the check terminal of circuit board VD-1, pin (4) of S1007), and then playback the service alignment tape (VJ-0113).

(2) Check the tape travel in the area of the back tension guide. If there is any looseness in either the upper or lower edges of the tape, adjust tape guides (a), (b), and (c) so that the guide flanges are not in contact. (See Fig. 7-6-2.)

(3) While checking the waveform (envelope), adjust tape guide (a) so that the lower flange of the guide supports the lower edge of the tape. Next, adjust so that the size of amplitude A of the waveform is approximately −6dB (1/2 the size) in relation to the size of amplitude B of the waveform at a position approximately 2/5 from the head switching point. (See Fig. 7-6-3.)

(4) While checking with the inspection mirror (VJ-0015), adjust tape guides (b) and (c) so that the upper flanges of the guides do not cause any creases in the tape, lowering both guide (b) and guide (c) equally in order to maximize the size of amplitude A. (See Fig. 7-6-4.)

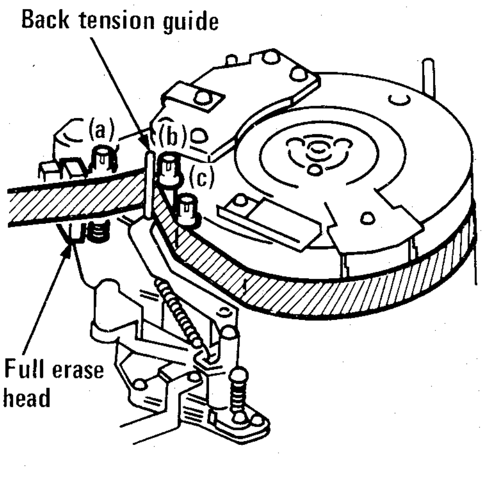


Fig. 7-6-2

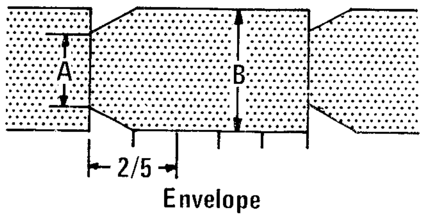


Fig. 7-6-3

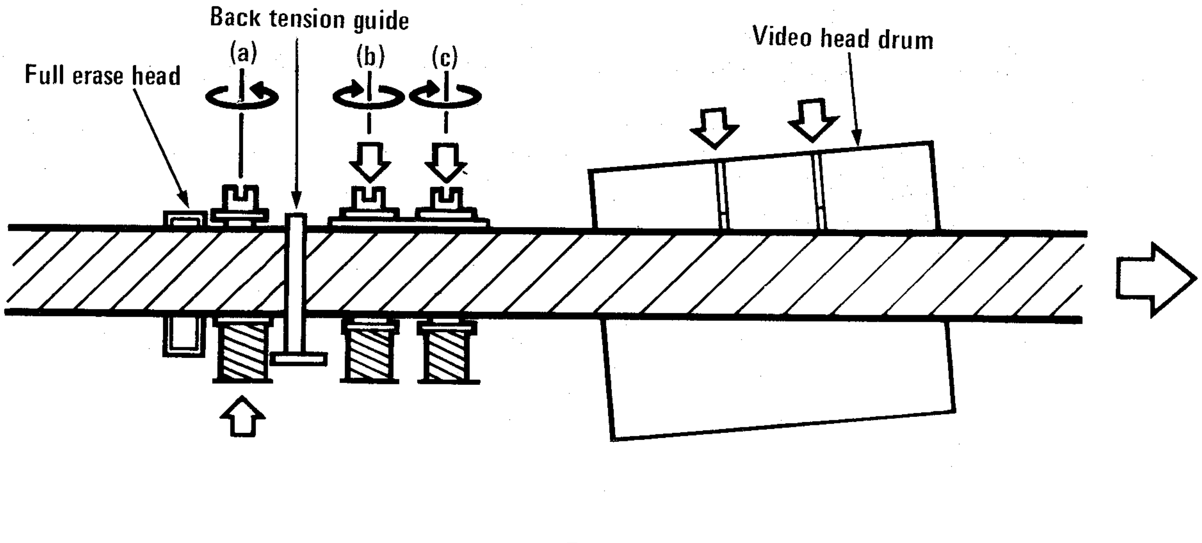


Fig. 7-6-4

Page 127 should be revised to the text contained below. Reason for revision: For smooth playback of soft tape. Applicable areas: Southeast Asia and Middle East only.

2. FULL-ERASE HEAD TAPE GUIDES (See Figs. 7-6-2 ~ 7-6-4.)

(1) Connect an oscilloscope to the video output terminal and then playback the service alignment tape (VJ-0113).
(2) Check the tape travel in the area of the back tension guide. If there is any looseness in either the upper or lower edges of the tape, adjust tape guides (a), (b), and (c) so that the guide flanges are not in contact.
(See Fig. 7-6-2 and Fig. 7-6-4)
(3) While observing the waveform, adjust tape guide (c). At this time, adjust so that the output of amplitude A of the waveform (the envelope) is 0 to −2 dB with regard to the output of amplitude B, which is at a point 2/5 of the way from the head switching point. (See Fig. 7-6-3) (This will be easy to see if you move the tracking control.)
(4) After adjusting tape guide (c), confirm that there is no fluctuation in the envelope at point A. If there is excessive fluctuation, readjust guide (c).
(5) Adjust tape guides (a) and (b) so that there are no wrinkles in the tape in the area of the guides, and then maximize amplitude A.

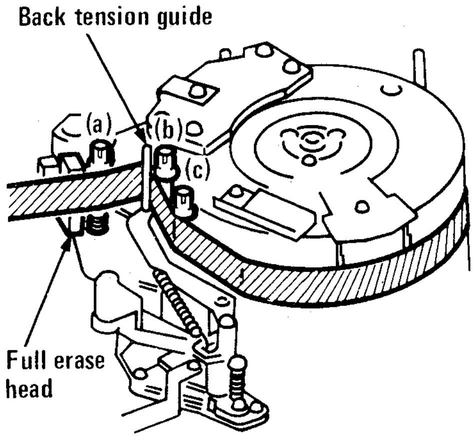
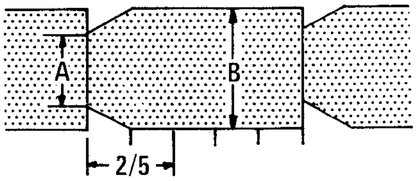


Fig. 7-6-2



Envelope
Fig. 7-6-3

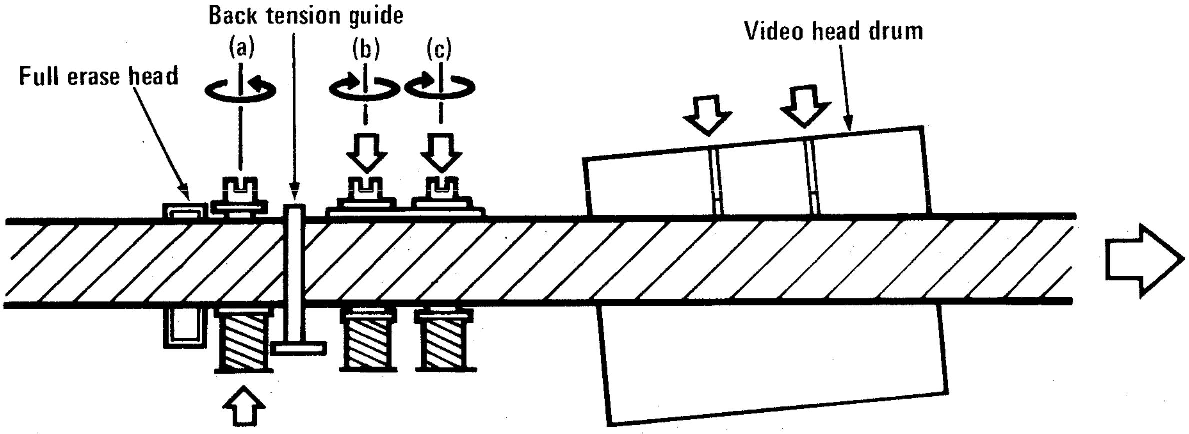


Fig. 7-6-4

3. AUDIO/CONTROL HEAD TAPE GUIDES (See Figs. 7-6-5, 7-6-6.)

(1) Connect an oscilloscope to the video output terminal (the check terminal of circuit board VD-1, pin (4) of S1007), and playback the service alignment tape (VJ-0113).

(2) Check the tape travel in the area of the audio/control head. If there is any looseness in either the upper or lower edges of the tape, adjust tape guides (a) and (b) so that the guide flanges are not in contact. (See Fig. 7-6-5.)

(3) While checking the waveform (envelope), adjust tape guide (b) so that the upper flange of the guide the upper edge of the tape. Next, adjust so that the size of amplitude A of the waveform is approximately –3dB ~ –6dB (2/3 ~ 1/2 the size) in relation to the size of amplitude B of the waveform at a position approximately 2/5 from the head switching point. (See Fig. 7-6-6.)

(4) While checking with the inspection mirror (VJ-0015), adjust tape guide (a) so that the upper flange of the guide does not cause, any creases in the tape, lowering guide (a) so that the size of amplitude A is maximized. (See Fig. 7-6-7.)

(5) If either the upper or lower edge of the tape is not in contact with the audio/control lead and the tape guides and there is a unbalance between the top and the bottom, it is probably caused by the audio/control head slanting either forward or backward. (Refer to item "**4. AUDIO/CONTROL HEAD**).

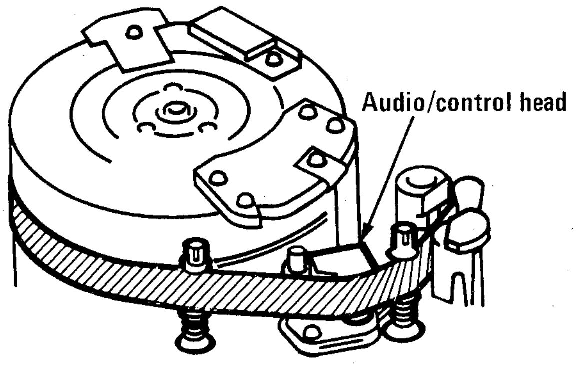


Fig. 7-6-5

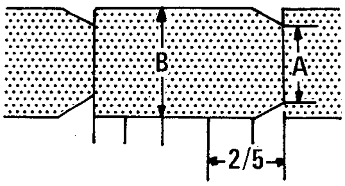


Fig. 7-6-6

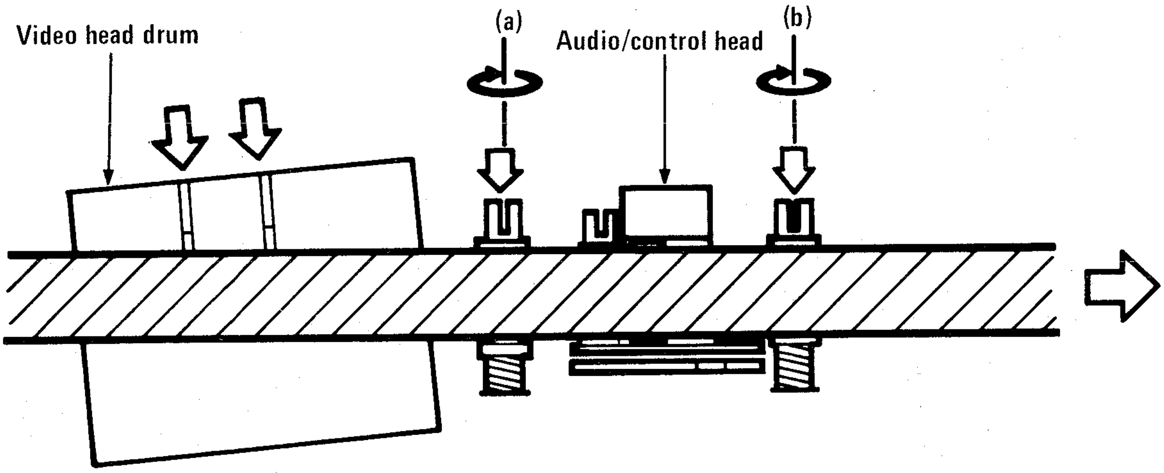


Fig. 7-6-7

4. AUDIO/CONTROL HEAD (See Fig. 7-6-8.)

Connect an oscilloscope to the audio output terminal (the check terminal of circuit board VD-1, pin (6) of S1008), and then playback the service alignment tape (VJ-0113).

[Slanting forward or backward]

Check the tape travel. If either the upper or lower edge of the tape is not in contact with the audio/control head and the tape guides, and there is an unbalance between the top and the bottom, adjust the Allen screw (a) by using the Allen wrench (VJ-0022). When the Allen screw (a) is turned to the right (clockwise), the audio/control head will slant forward, and when the Allen screw (a) is turned to the left (counter clockwise), the audio/control head will slant backward.

[Head height]

Adjust nut (b) with a flat-tipped screwdriver so that the audio output is maximized.

[Azimuth (head left-right angle)]

Adjust screw (c) with a Phillips (cross-tipped) screwdriver so that the audio output is maximized.

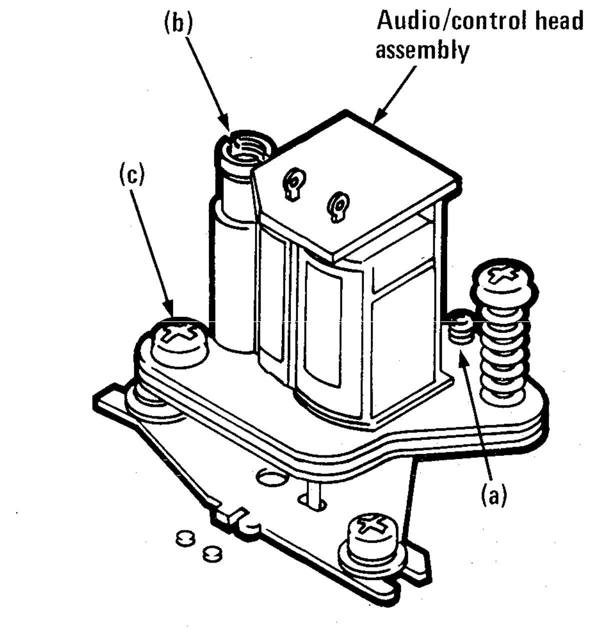


Fig. 7-6-8

5. TRACKING (See Fig. 7-6-9.)

(1) Connect an oscilloscope to the video output terminal (the check terminal of circuit board VD-1, pin (4) of S1007), and playback the service alignment tape (VJ-0113).

(2) Loosen screws (a) and (b) approximately a 45° (1/4) turn only, insert a flat-tipped screwdriver into the notch (c), and turn left and right to adjust so that the waveform (envelope) observed on the oscilloscope is maximized.

(Caution)

If screws (a) and (b) are loosened too much and the adjustment is made, the proper adjustment might be lost when the screws are retightened.

(3) After making the adjustment, retighten screws (a) and (b).

(4) Next, playback a tape which was previously recorded and confirm that the envelope is maximized when the tracking control is at the center position.

(Caution)

If the envelope appears to be minimized when the tracking control is at the center position, readjust the tracking control and set it to a different envelope maximum point.

(5) Turn the tracking control to the right and left so that the waveform (envelope) which appears on the oscilloscope changes fairly evenly.

(6) Record and playback a television broadcast, and confirm that there are no problems with the image on the screen.

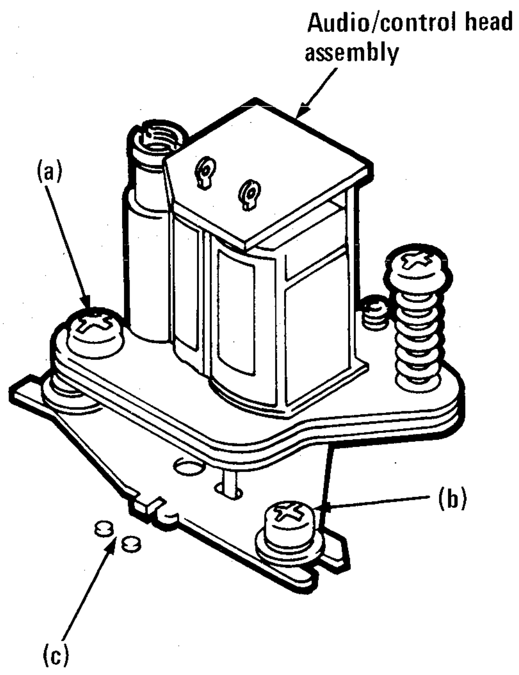
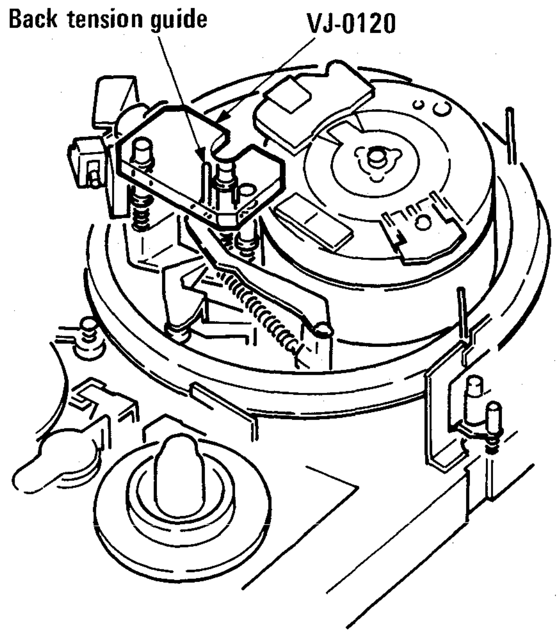


Fig. 7-6-9

G. USING METHOD OF MECHANISM JIG

[Adjustment gauge of back tension guide ... VJ-0120]

[METHOD]


Back tension guide
VJ-0120

[CHECK]

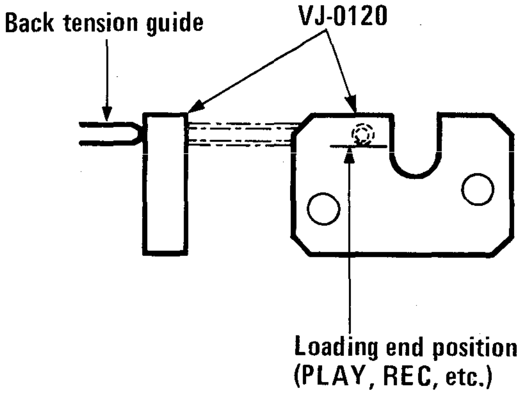
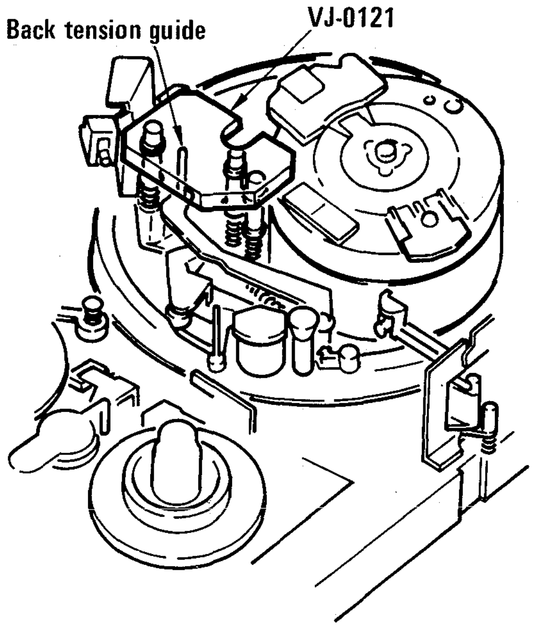

Back tension guide
VJ-0120
Loading end position
(PLAY, REC, etc.)

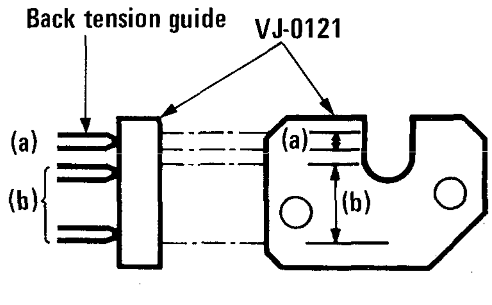
Fig. 7-6-10

[Checker adjustment gauge of back tension guide ... VJ-0121]

[METHOD]


Back tension guide
VJ-0121

[CHECK]


Back tension guide
VJ-0121
(a)
(b)
(a)
(b)

(a): Loading end PLAY position area
(b): F FWD, REW position area

Fig. 7-6-11

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage and voltage ratings shown.

ACCESSORIES

Ref. No.	Parts No.	Description
	143-6-411T-38300	Owner's Manual
	4-243V-37500	Antenna Output Cable
	143-9-198T-00100	Driving Tuning

NOTE: Parts order must contain Model Number, and Description.

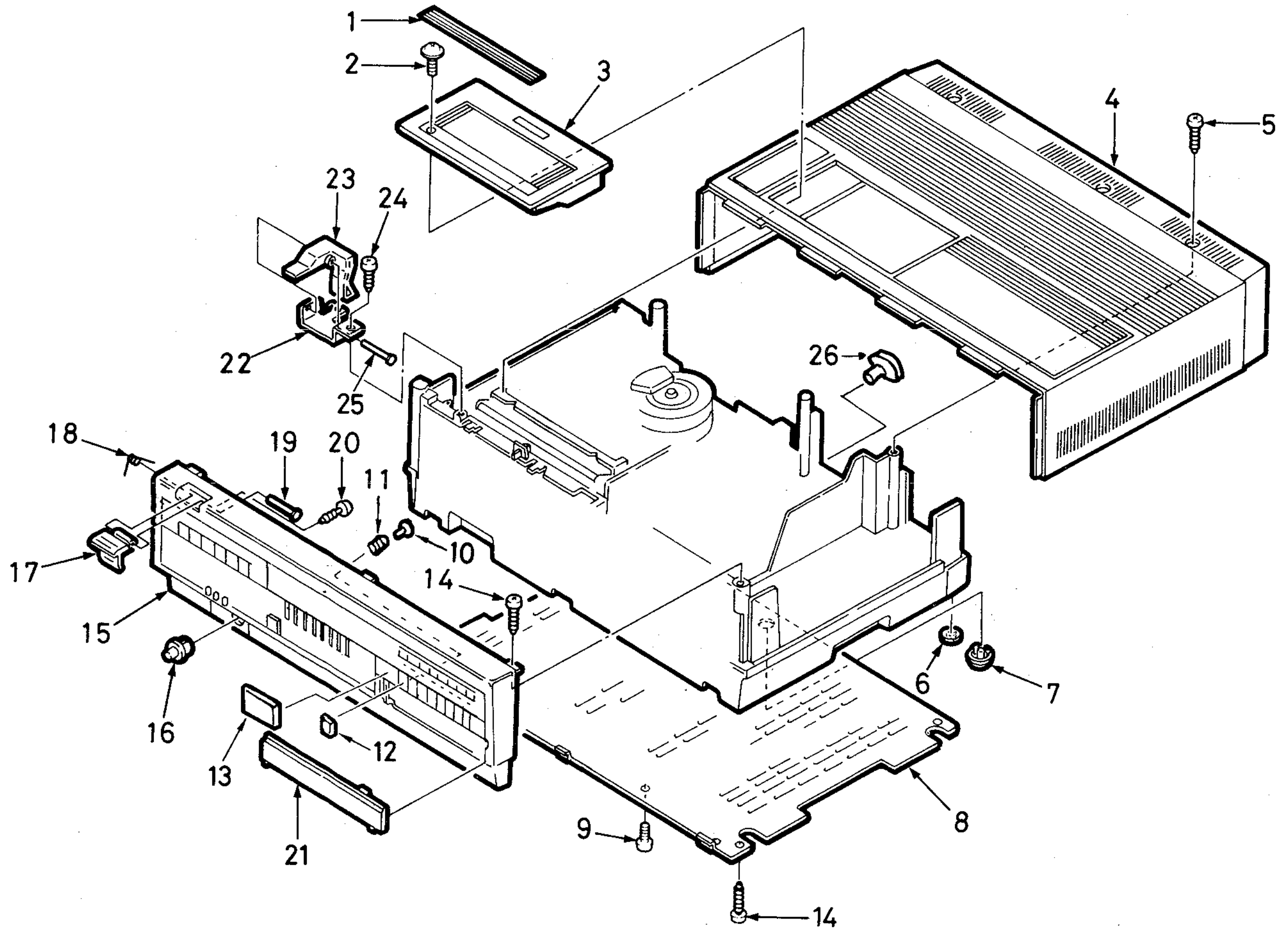
PACKING MATERIALS

Ref. No.	Parts No.	Description
	143-6-132T-31700	Individual Carton
	143-6-251T-02200	Individual Polyethylene Cover
	143-6-144T-05901	Left Pad
	143-6-144T-06001	Right Pad

CABINET PARTS

Ref. No.	Parts No.	Description
1	143-2-241T-03700	Veil, Cassette Cover
2		Screw, Pan Hd., Machine, 3 x 6mm, Z1
3	143-0-135T-04100	Cover, Cassette
4	143-9-4200-51300	Cabinet
5		Screw, Binding Hd., Tapping, 4 x 20mm, ZK
6	143-2-174T-02400	Plastic Cushion (4 used)
7	143-2-174T-02700	Foot, Bottom Lid
8	143-2-125T-03900	Bottom Lid
9		Screw, Binding Hd., Tapping, 3 x 6mm, Z1
10	143-2-464T-09300	Fixer, Channel Button (8 used)
11	143-2-851T-63700	Spring Coil, Channel Button (8 used)
12	143-2-161T-19000	Push Button, Channel Select (8 used)
13	143-2-153T-09400	Plastic Plate (2 used)
14		Screw, Pan Hd., Tapping, 4 x 16mm, Z1
15	143-0-122T-17121	Front Panel
16	143-2-163T-02700	Tracking Control Knob
17	143-2-161T-19100	EJECT Button
18	143-2-852T-05500	Spring Wire, EJECT Button
19	143-2-751T-57800	Shaft, EJECT Button
20		Screw, Pan Hd., Tapping, 3 x 8mm, Z1
21	143-9-4200-51200	Channel Pre-set Compartment Lid
22	143-2-351T-48800	Bracket, Operation EJECT Lever
23	143-2-741T-38800	Operation EJECT Lever
24		Screw, Washer Hd., Tapping, 3 x 10mm, Z1
25	143-2-751T-54500	Shaft, Operation EJECT Lever
26	143-2-135T-26800	Rubber Cap, RF channel Select

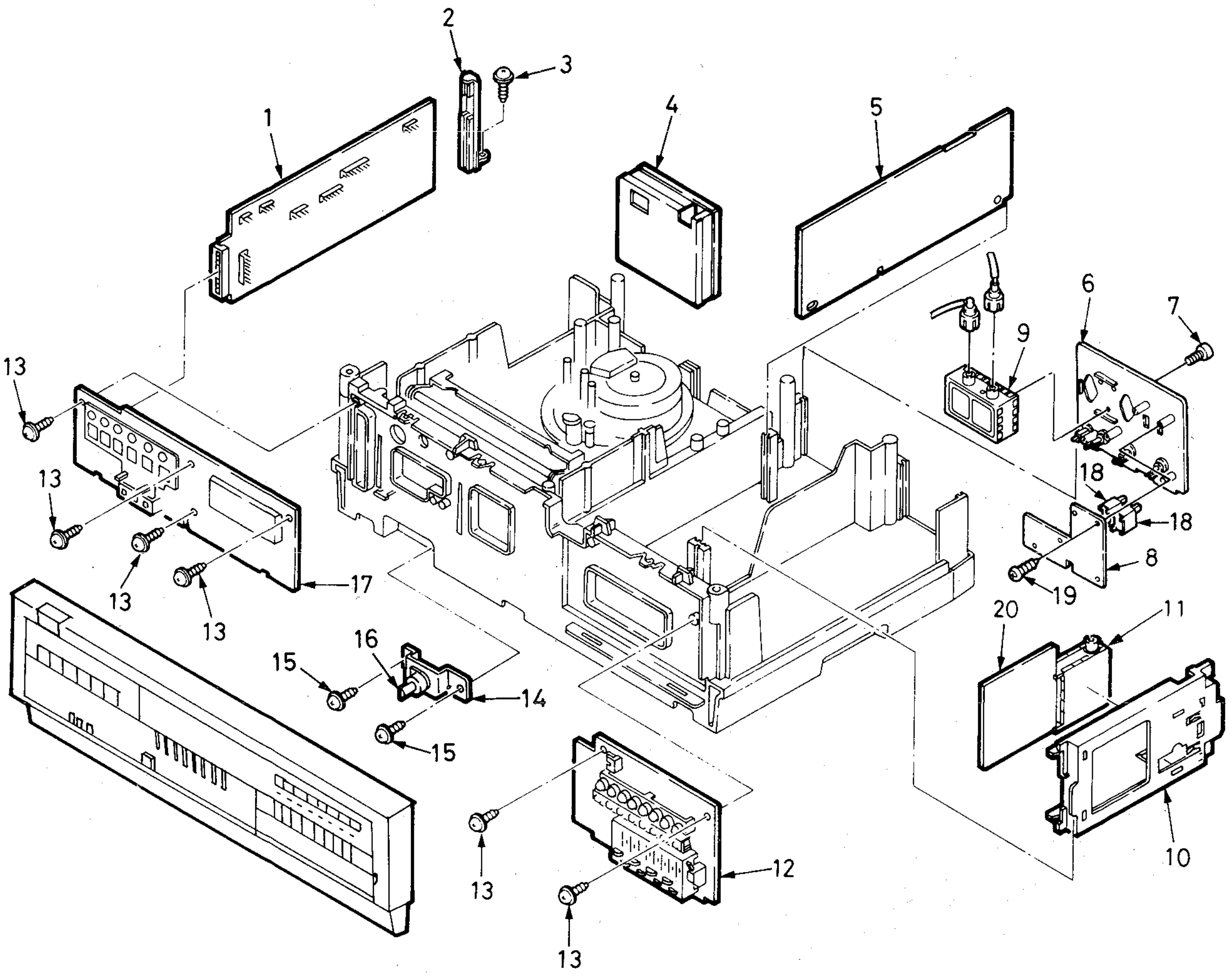
NOTE: Parts order must contain Model Number, and Description.



FRONT CONTROL & REAR TERMINAL PARTS

Ref. No.	Parts No.	Description
1	143-0-230V-21300	SY-1 Circuit Board Assembly
2	143-2-377T-16200	Bracket, SY-1 P.C. Board
3		Screw, Washer Hd., Tapping, 3 x 12mm, Z1
4	143-9-1100-02200	VP-1 Circuit Board Assembly
5	143-0-230V-22450	SV-1 Circuit Board Assembly
(5)	143-0-230V-34000	SV-1 Circuit Board Assembly
6	4-237V-17400	Antenna Terminal Board
7		Screw Pan Hd., Machine, 3 x 6mm, ZK
8	4-230V-06900	TB-1 PC Board
9	4-115V-18000	Antenna Booster
10	143-2-359T-00800	Bracket, Tuner Assembly
11	4-115V-17000	Tuner
or	4-115V-17500	Tuner
12	143-0-230V-24200	TN-2 Circuit Board Assembly, Channel Pre-set & Select
13		Screw, Washer Hd., Tapping, 3 x 10mm, Z1
14	143-2-361T-01900	Bracket, Tracking Control VR
15		Screw, Washer Hd., Tapping, 3 x 8mm, Z1
16	4-222V-14100	Tracking Control VR
17	143-0-230V-07621	SY-2 Circuit Board Assembly, Timer & Operation
18	4-231V-19900	Slide Switch,
19		Screw, Pan Hd., Tapping, 3 x 10mm, Z1
20	143-9-0600-07702	TN-1 Circuit Board Assembly

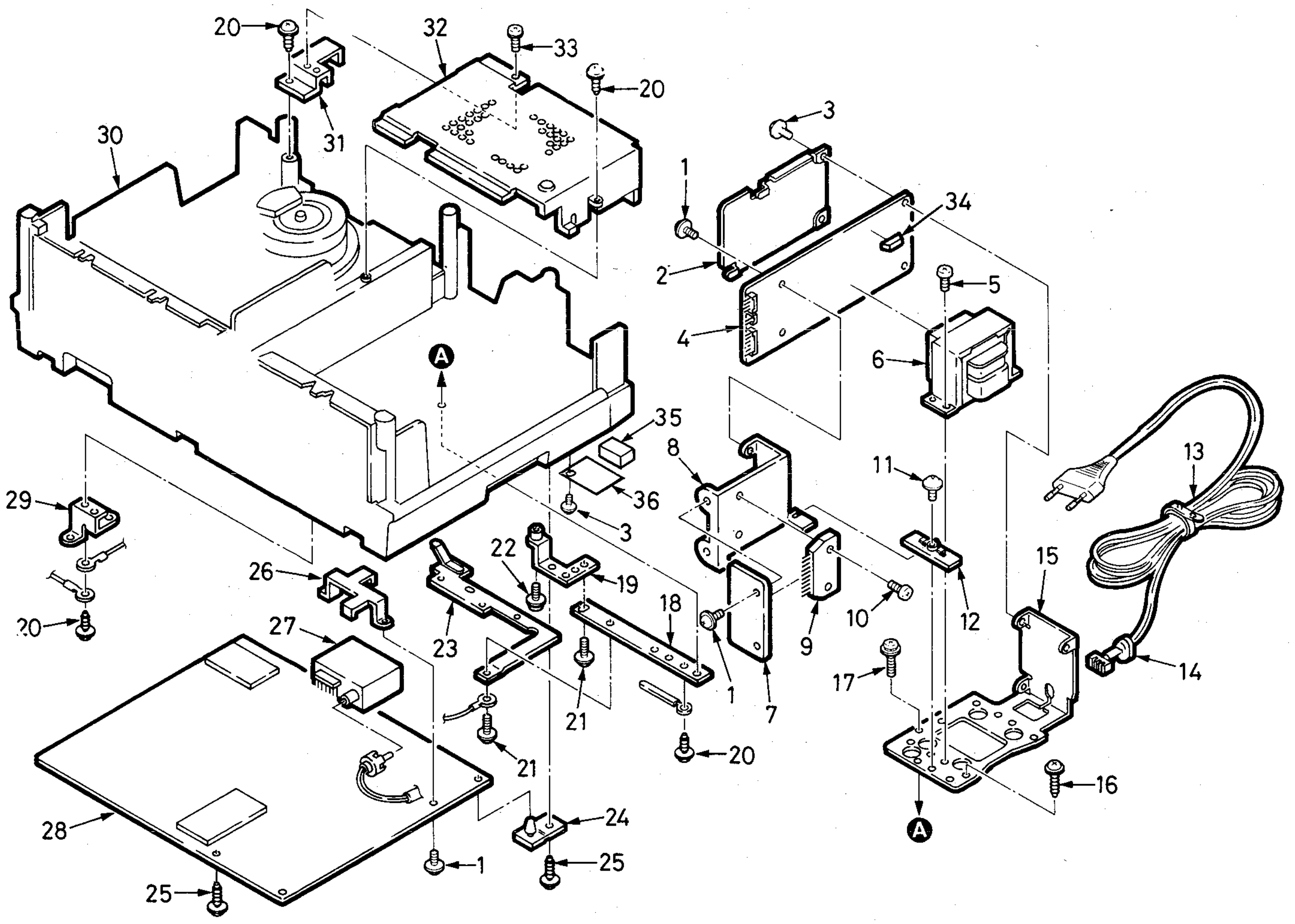
NOTE: Parts order must contain Model Number, and Description.



BOTTOM & RIGHT SIDE P.C.B.'s PARTS

Ref. No.	Parts No.	Description
1		Screw, Washer Hd., Machine (TP Screw), 3 x 6mm, Z1
2	143-2-327T-07100	Insulator, PW-1 P.C.Board
3		Screw, Washer Hd., Machine, 3 x 8mm, Z1
4	143-9-0500-11100	PW-2 Circuit Board Assembly
5		Screw, Washer Hd., Machine (TP Screw), 4 x 8mm, Z1
6	⚠4-251V-26900	Power Transformer
7	143-0-230V-06371	PW-1 Circuit Board Assembly
8	143-2-368T-06000	Heat Sink
9		IC, STK7216, IC5101
10		Screw with Spring Washer & Flange Washer, Pan Hd., Machine, 3 x 14mm, Z1
11		Screw with Spring Washer & Flange Washer, Pan Hd., Machine, 3 x 12mm, Z1
12	143-2-327T-06500	Heat Insulator
13	⚠143-0-236V-67500	Power Cord Assembly
14	143-2-464T-02700	Fixer, Power Cord
15	143-2-371T-01002	Bracket, Power Transformer
16		Screw, Pan Hd., Tapping, 4 x 16mm, ZK
17		Screw with Spring & Flange Washer, Pan Hd., Machine, 3 x 10mm, Z1
18	143-2-351T-49100	Grounding Plate
19	143-0-351T-09900	Bracket, Mechanism Grounding
20		Screw, Washer Hd., Tapping, 3 x 10mm, Z1
21		Screw with Spring Washer, Pan Hd., Machine, 3 x 6mm, Z1
22		Screw with Spring Washer & Flange Washer, Pan Hd., Machine, 3 x 16mm, Z1
23	143-0-351T-10100	Grounding Plate, VP-1 P.C.Board
24	143-2-251T-00900	Hinge (2 used), VD-1 P.C.Board
25		Screw Washer Hd., Tapping, 3 x 12mm, ZR
26	143-2-351T-50200	Bracket, RF Convertor
27	143-9-4300-51500	RF Convertor
28	143-0-230V-20871	VD-1 Circuit Board Assembly without RF Convertor, Bracket, Video & Audio
29	143-2-351T-49000	Bracket, Bottom Grounding
30	143-2-311T-08000	Chassis (not service parts)
31	143-2-465T-10200	Bracket, VP-1 P.C.B. Assembly
32	143-2-322T-26900	Shield Plate
33		Screw with Spring Washer, Pan Hd., Machine, 3 x 6mm, Z1
34	143-2-135T-15000	Fuse Cover
35	4-282V-11400	Filter
36	143-2-351T-53300	Bracket, Filter

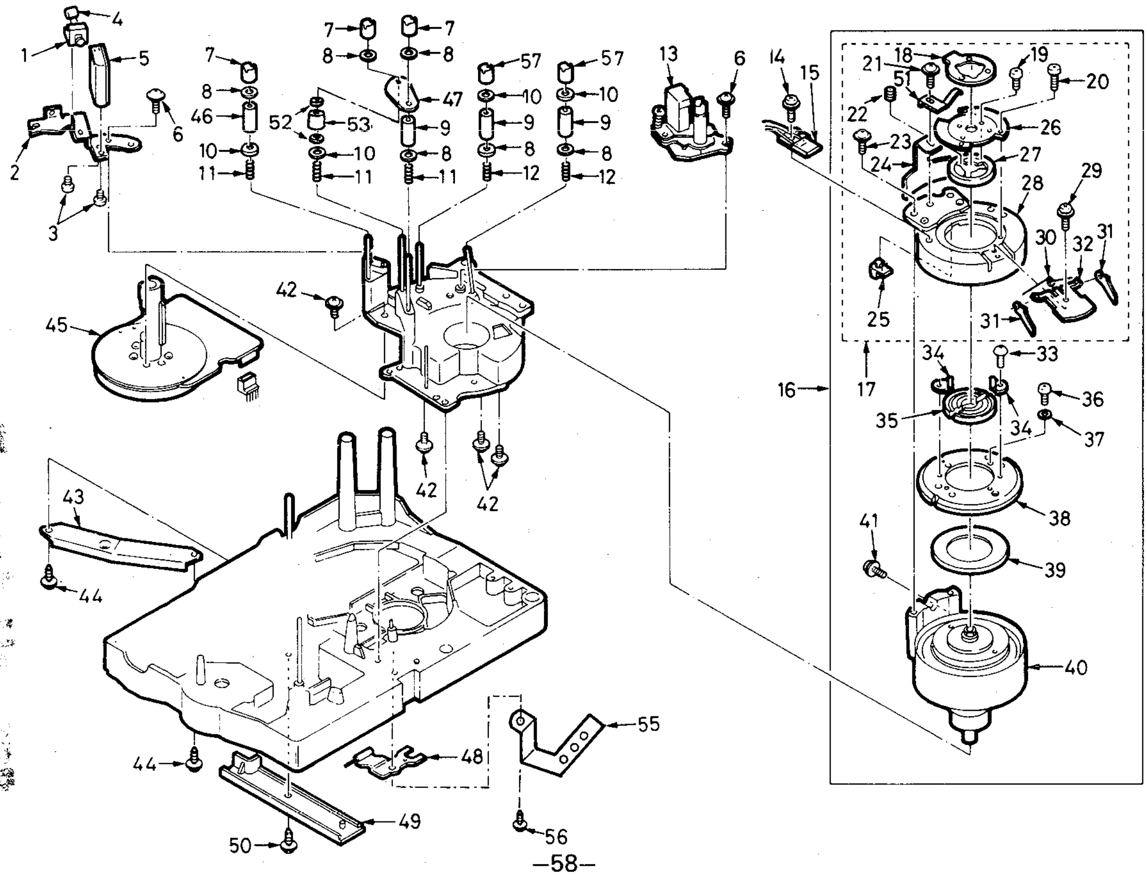
NOTE: Parts order must contain Model Number, and Description.



DRUM, CAPSTAN, GUIDE & HEAD PARTS

Ref. No.	Parts No.	Description
1	4-258V-14500	FWD Sensor
2	143-2-375T-07600	Bracket, Erase Hd. & FWD Sensor
3		Screw, Pan Hd., Machine, 2 x 3mm, Z1
4		Polypropylene Capacitor, 4700pF (±2%) 100V
5	4-242V-18700	Erase Head
6		Screw, Washer Hd., Machine (TP Screw), 3 x 6mm, Z1
7	143-2-421T-03400	Special Nut (3 used), Tape Path Adj.
8	143-2-457T-07900	Special Washer (7 used), Tape Path Adj.
9	143-2-821T-08300	Tape Guide (4 used)
10	143-2-457T-07800	Special Washer (3 used), Tape Path Adj.
11	143-2-851T-61000	Spring Coil (3 used), Erase Head
12	143-2-851T-61100	Spring Coil (2 used), Tape Path Adj.
13	143-0-242V-03100	Audio/Control Head Assembly
14		Screw with Spring Washer & Flange Washer, Pan Hd., Machine, 3 x 6mm, Z1
15	4-221V-12601	DEW Sensor
16	143-9-5100-43100	Drum Complete, without Shield Plate
17	143-0-771T-02400	Upper Drum Complete
18	4-226V-75350	Wiring P.C.Board
19		Screw, Pan Hd., Machine, 2.6 x 3mm, Z1
20		Screw, Pan Hd., Machine, 2.6 x 6mm, Z1
21		Screw, Washer Hd., Machine (TP Screw), 3 x 4mm, Z1
22		Set Screw, Hex. Socket Hd., Machine (Flat Point), 2.6 x 4mm, CP
23		Screw with Washer, Pan Hd., Machine, 4 x 12mm, Z1
24	143-2-322T-24500	Shield Plate, Audio/Control Head
25	4-264V-14100	P.G. Coil
26	143-2-351T-43500	Bracket, Upper Rotary Trans.
27	143-0-260V-00400	Rotary Trans., Upper
28	143-2-776T-01250	Upper Drum
29		Screw with Spring Washer & Washer, Pan Hd., Machine, 3 x 6mm, Z1
30	143-2-851T-56901	Spring Coil, Tape Path Levers
31	143-2-741T-34300	Tape Path Lever (2 used)
32	143-2-747T-05600	Bracket, Tape Path Lever
33		Screw, Pan Hd., Machine, 2.6 x 4mm, Z1
34	143-2-371T-00500	Bracket (2 used), Lower Rotary Trans. Fix
35	4-260V-00600	Lower Rotary Trans.
36		Screw, Pan Hd., Machine, 3 x 6mm, Z1
37	143-2-457T-06800	Special Washer (2 used), Video Head
38	143-0-242V-01700	Video Head Disc
39	143-2-772T-02600	Spacer, V-head Height Adj., 0.02mm Dia.
or	143-2-772T-02700	Spacer, V-head Height Adj., 0.04mm Dia.
40	143-0-771T-02500	Lower Drum Complete
41		Screw with Spring Washer & Washer, Pan Hd., Machine, 3 x 8mm, Z1
42		Screw, Washer Hd., Machine (TP Screw), 3 x 8mm, Z1
43	143-2-465T-09900	Bracket, Capstan Motor
44		Screw, Washer Hd., Tapping (B tight), 3 x 10mm, Z1
45	4-527V-51000	Capstan Motor
46	143-2-821T-06701	Tape Guide
47	143-2-821T-08400	Tape Guide, Upper
48	143-0-764T-00500	Brush, Drum Discharge
49	143-2-464T-08500	Leads Protector
50		Screw, Washer Hd., Tapping (B tight), 3 x 8mm, Z1
51	143-2-853T-09400	Spring Plate, Shield Plate
52	143-2-683T-08300	Ring
53	143-0-662T-00800	Roller
55	143-0-351T-09900	Bracket
56		Screw with Spring & Flange Washer Pan Hd., Machine, 3 x 16mm, Z1
57	143-2-421T-06800	Special Nut (2 used)

NOTE: Parts order must contain Model Number, and Description.

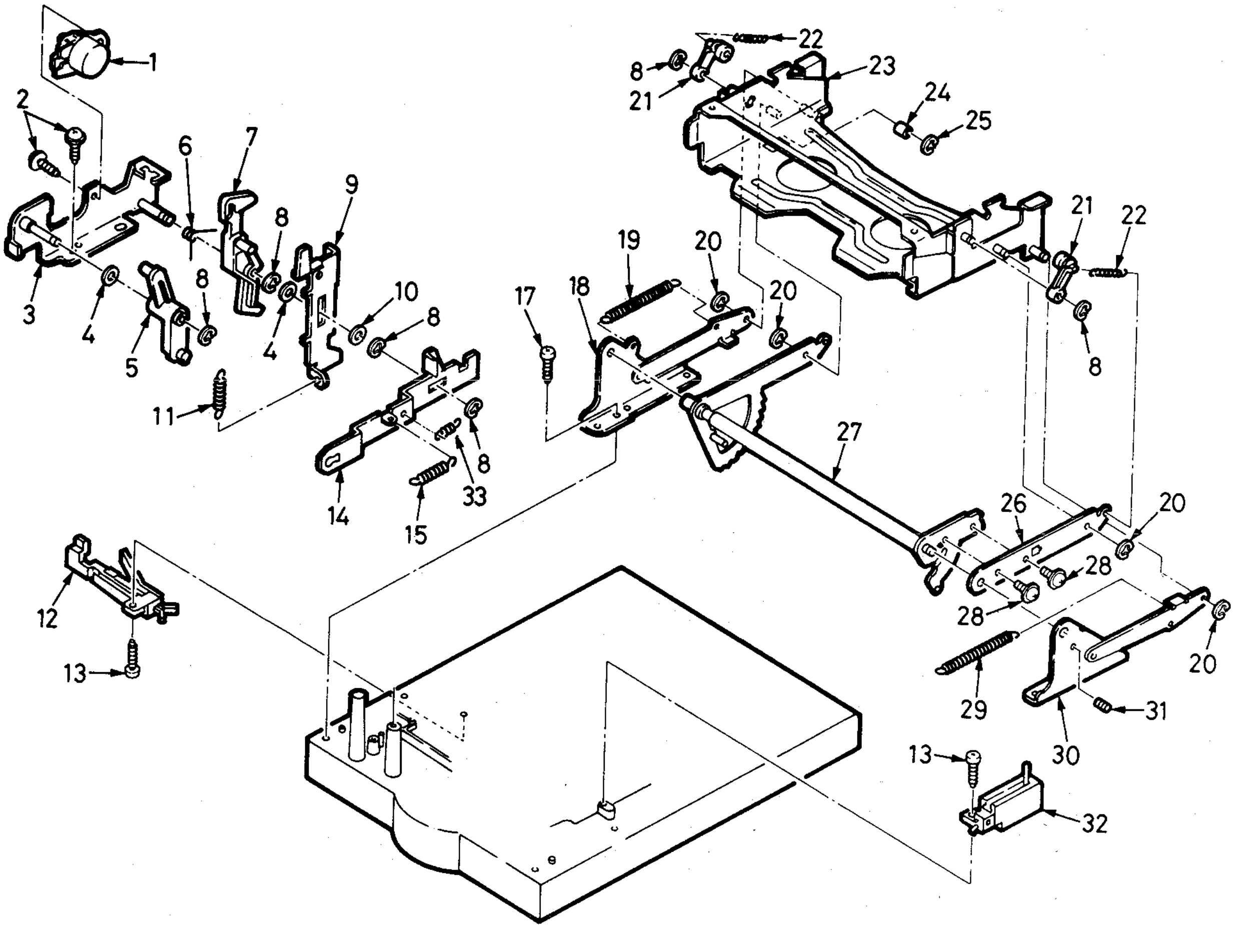


CASSETTE HOLDER MECHANISM PARTS

Ref. No.	Parts No.	Description
1	143-0-774T-00501	Oil Damper
2		Screw, Washer Hd., Tapping (B-tight), 3 x 8mm, Z1
3	143-0-747T-01701	Bracket, Cassette Lock Mechanism
4	141-2-453T-30302	Poly. Washer, 3 x 5.4 x 0.5mm
5	143-2-741T-38200	Lever, Operation EJECT
6	143-2-851T-60300	Spring Coil, Cassette Holder Lock Lever
7	143-2-741T-38100	Lever, Cassette Holder Lock
8		"E" Ring, 2.3mm
9	143-2-741T-38500	Lever, Operation Cassette-in Switch
10	141-2-453T-30301	Poly. Washer, 3 x 5.4 x 0.25mm
11	143-2-851T-60200	Spring Coil, Cassette-in Switch Lever
12	4-231V-81600	Cassette-in Switch
13		Screw, Pan Hd., Tapping, 2.6 x 10mm, Z1
14	143-2-741T-38400	Joint Lever, Operation EJECT
15	143-2-851T-63200	Spring Coil, Joint Lever

Ref. No.	Parts No.	Description
17		Screw, Washer Hd., Tapping (B-tight), 3 x 10mm, Z1
18	143-0-351T-07000	Cassette Holder Stand, Left Side
19	143-2-851T-54900	Cassette-up Spring Coil, Left Side
20		"E" Ring, 3mm
21	143-2-741T-32900	Lever (2 used), Cassette Hold
22	143-2-851T-63400	Spring Coil (2 used), Cassette Hold
23	143-0-351T-06900	Cassette Holder
24	143-2-662T-08900	Roller, Cassette Holder Lock
25		"E" Ring, 1.5mm
26	143-2-741T-32700	Bracket, Cassette-up
27	143-0-751T-01800	Shaft, Cassette-up
28		Screw, Washer Hd., Machine (TP Screw), 3 x 4mm, Z1
29	143-2-851T-64000	Cassette-up Spring Coil, Right Side
30	143-0-351T-07100	Cassette Holder Stand, Right Side
31	143-2-421T-04400	Adjustment Screw, Cassette-up
32	4-231V-81900	Erase Prevention Switch
33	143-2-851T-64300	Spring Coil, Joint Lever

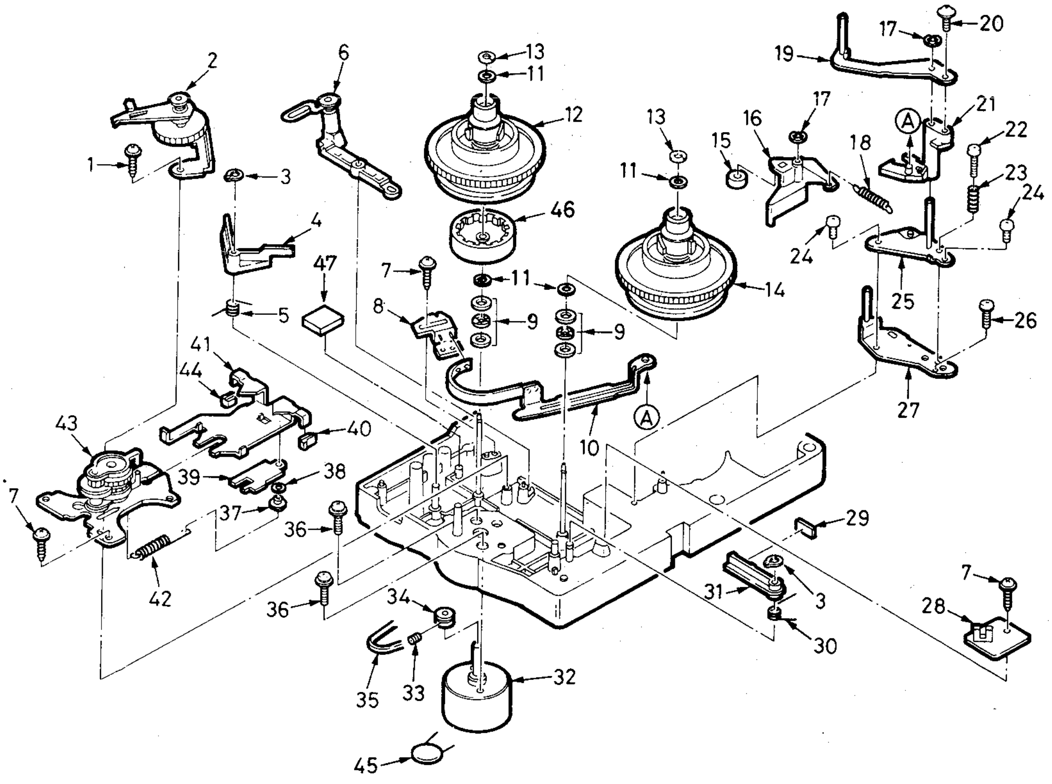
NOTE: Parts order must contain Model Number, Part Number and Description.



REEL DRIVE MECHANISM PARTS

Ref. No.	Parts No.	Description
1		Screw, Washer Hd., Tapping (B tight), 3 x 10mm, Z1
2	143-0-714T-00200	Rachet Brake Lever
3		Grip Ring, 3mm
4	143-2-741T-39100	Lever, Supply Reel Soft Brake
5	143-2-851T-59700	Spring Coil, Supply Reel Soft Brake Lever
6	143-0-741T-19900	Lever, Operation Mode Select Slide
7		Screw, Washer Hd., Tapping (B tight), 3 x 8mm, Z1
8	143-2-351T-43700	Bracket, Back Tension Brake Band
9	143-2-574T-02800	Bearing (2 used), Reel Bases
10	**143-0-711T-00500**	**Brake Band, Back Tension (with Bracket)**
11	141-2-453T-30300	Poly. Washer, 3 x 5.4 x 0.13mm (Reel Base Height Adj.)
or	141-2-453T-30301	Poly. Washer, 3 x 5.4 x 0.25mm
or	141-2-453T-30302	Poly. Washer, 3 x 5.4 x 0.5mm
12	**143-0-531T-03300**	Supply Reel Base
13	143-2-457T-05901	Stopper (2 used), Reel Bases
14	143-0-531T-03400	Take-up Reel Base
15	143-2-662T-09700	Roller, Operation Back Tension Lever
or	143-2-662T-09701	Roller, Operation Back Tension Lever
or	143-2-662T-09702	Roller, Operation Back Tension Lever
16	143-2-741T-37500	Lever, Operation Back Tension Lever
17		"E" Ring, 2.3mm
18	143-2-851T-59400	Spring Coil, Operation Back Tension Lever
19	143-0-741T-19700	Back Tension Lever
20		Screw, Washer Hd., Tapping (B tight), 3 x 6mm, Z1
21	143-2-741T-37600	Operation Lever, Back Tension
22		Screw, Pan Hd., Machine, 3 x 16mm, Z1
23	143-2-851T-59500	Spring Coil, Back Tension Adj.
24		Screw, Pan Hd., Machine, 3 x 6mm, Z1
25	143-0-747T-01500	Bracket, Back Tension Lever
26		Screw with Spring Washer & Washer, Pan Hd., Machine, 3 x 8mm, Z1
27	143-0-747T-01600	Bracket, Back Tension Lever Block
28	143-9-1300-01100	MC-1 Circuit Board Assembly, Supply Reel Revolution Detect
29	143-2-712T-03000	Brake Shoe, Supply Reel Soft Brake
30	143-2-851T-59600	Spring Coil, Take-up Reel Soft Brake Lever
31	143-2-741T-37400	Lever, Take-up Reel Soft Brake
32	4-529V-10800	Reel Motor
33		Set Screw, Hex. Socket Hd., Machine (Dented Point), 2.6 x 4mm, CP
34	143-2-661T-68800	Reel Motor Pulley
35	143-2-564T-03200	Square Belt, Reel Belt
36		Screw with Spring Washer & Flange Washer, Pan Hd., Machine, 2.6 x 6mm, Z1
37	143-2-681T-12000	Sleeve, Mode Select Slide
38	143-2-457T-08600	Poly. Washer, 4.6 x 8 x 0.5mm, Mode Select Slide
39	143-2-246T-05600	Sheet, Mode Select Slide
40	143-2-712T-02900	Brake Shoe, Take-up Reel
41	143-0-731T-01500	Mode Select Slide
42	143-2-851T-59200	Spring Coil, Mode Select Slide
43	143-0-662T-01201	Reel Drive Pulley Unit
44	143-2-712T-03200	Brake Shoe, Supply Reel
45		BL Ceramic Capacitor, 0.1mfd (M) or (K), 50V
46	143-2-661T-69300	Pulley, Supply Reel Back Tension
47	143-9-1300-02600	MC-10 Circuit Board Assembly

NOTE: Parts order must contain Model Number, Part Number and Description.

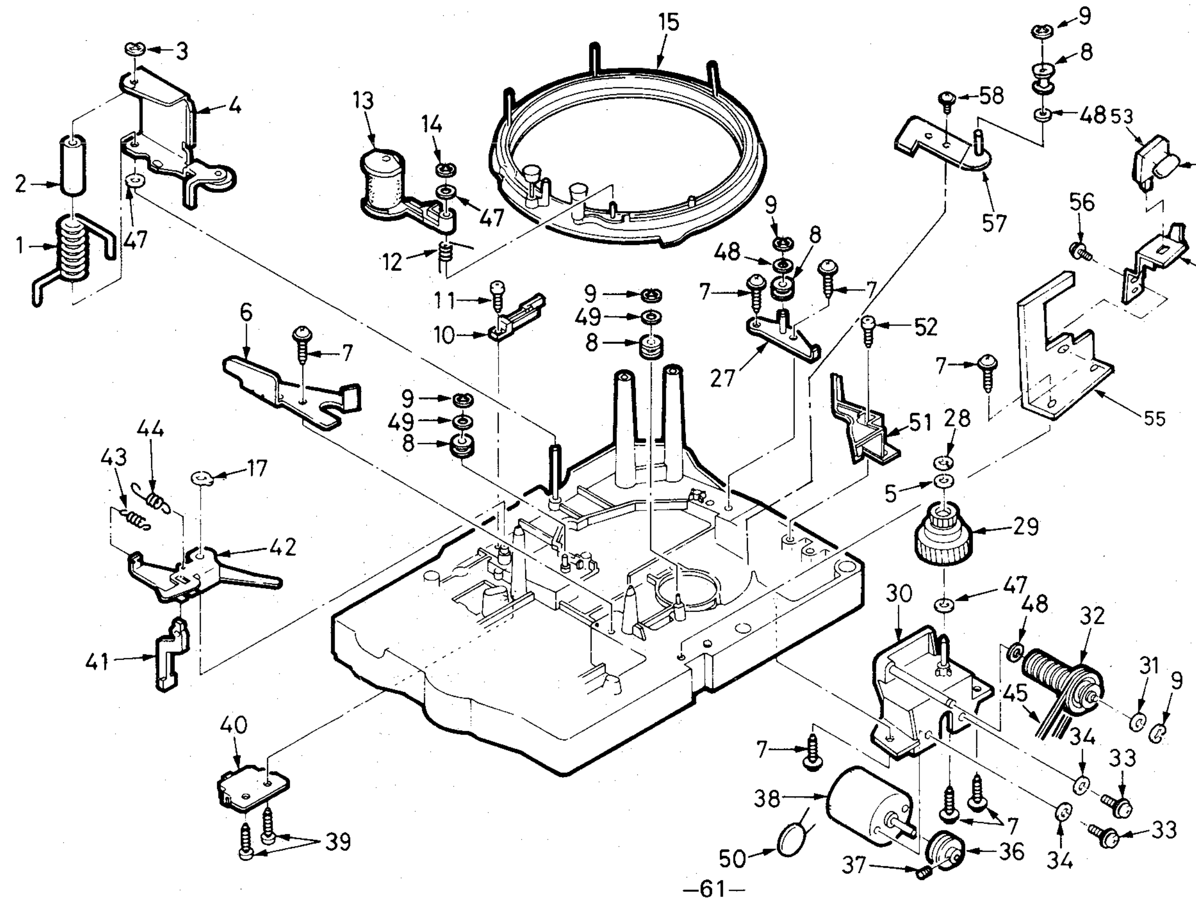


LOADING & UNLOADING MECHANISM PARTS

Ref. No.	Parts No.	Description
1	143-2-851T-60700	Spring Coil, Pinch Roller Pressure
2	143-2-461T-03202	Pipe, Pinch Roller Pressure Lever
3		"E" Ring, 3mm
4	143-0-741T-19801	Lever, Pinch Roller Pressure
5	141-2-453T-30302	Poly. Washer, 3 x 5.4 x 0.5mm
6	143-2-465T-10100	Stopper, Pinch Roller Guide
7		Screw, Washer Hd., Tapping (B tight), 3 x 8mm, Z1
8	143-2-662T-09900	Loading Guide Roller (4 used)
9		"E" Ring, 2mm
10	4-231V-82000	Loading End Switch
11		Screw, Pan Hd., Tapping, 2.6 x 10mm, Z1
12	143-2-851T-60600	Spring Coil, Pinch Roller
13	143-9-5100-40900	Pinch Roller
14		"E" Ring, 2.3mm
15	143-0-683T-00401	Loading Ring
17		Grip Ring, 3mm
19		Polypropylene Capacitor, 3300pF (±2%), 100V
27	143-0-351T-08400	Bracket, Loading Guide Roller
28	143-2-457T-05901	Speical Washer, Shaft Stopper
29	143-2-581T-05300	Gear, Loading Drive
30	143-0-378T-00700	Bracket, Loading Motor
31	141-2-453T-30201	Poly. Washer, 2.6 x 4.7 x 0.25mm
32	143-0-581T-03200	Worm Gear, Loading Drive Gear
33		Screw with Spring Washer, Pan Hd., Machine, 2.6 x 4mm, Z1
34		Bolt Washer, 2.6 x 5.8 x 0.5mm

Ref. No.	Parts No.	Description
36	143-2-661T-68801	Loading Roller
37		Set Screw, Hex. Socket Hd., Machine (Dented Point), 2.6 x 6mm, CP
38	4-527V-00900	Loading Motor
39		Screw, Pan Hd., Tapping (B tight), 2.3 x 12mm, Z1
40	4-231V-81700	Unloading End Switch
41	143-2-741T-39000	Operation Lever, Unloading End Switch
42	143-2-741T-38600	Lock Lever, Operation EJECT
43	143-2-851T-61200	Spring Coil, Operation Unloading End Switch
44	143-2-851T-60100	Spring Coil, EJECT Lock Lever
45	143-2-564T-03500	Square Belt, Loading Belt
47	141-2-453T-30302	Poly. Washer, 3 x 5.4 x 0.5mm
48	141-2-453T-30200	Poly. Washer, 2.6 x 4.7 x 0.13mm
49	141-2-453T-30201	Poly. Washer, 2.6 x 4.7 x 0.25mm
50		BL Ceramic Capacitor, 0.1mfd (M), 50V
51	143-2-530T-00200	Guide, Loading Ring
52		Screw, Pan Hd., Tapping (Sharp Point), 3 x 8mm, Z1
53	4-258V-15500	REW Sensor
54	143-2-351T-53800	Bracket, REW Sensor
55	143-2-174T-02900	Bracket, REW Sensor
56		Screw with Spring Washer, Washer Hd., Tapping (B-tight), 3 x 6mm, Z1
57	143-0-351T-10500	Bracket, Loading Guide Roller
58		Screw, Washer Hd., Tapping (B tight), 3 x 8mm, Z1

NOTE: Parts order must contain Model Number, Part Number and Description.



ELECTRICAL PARTS

NOTE:

* Materials of Capacitors are abbreviated as follows:

Elect.,	Electrolytic Capacitor
NP. Elect.,	Non-Polarized Electrolytic
Mylar	Mylar Film Capacitor
Polypro	Polypropylene Capacitor
M. Polypro	Metallized Polypropylene Capacitor
TF	Thin Film Capacitors

* Tolerance of Capacitor are noted with follow symboles:

A	+50–10%	M	±20%
G	±2%	N	±30%
J	±5%	P	+100–0%
K	±10%	Z	+80–20%

(1) VD-1 PCB ELECTRICAL PARTS (143-0-230V-20871)

* All resistors are of carbon type, ±5%, 1/4 watt unless otherwise noted.

Schematic Location	Parts No.	Description
		***VIDEO CIRCUIT Location No. 1001 ~**
	143-2-351T-50200	Bracket Mounting
	143-2-464T-07700	Fixer
BPF1001	4-228V-15000	LC Pack
BPF1002	4-228V-15600	LC Pack
X1001	4-225V-19000	Cristal
X 1002	4-225V-18400	Cristal
CF1001	4-953V-06100	Filter
VC1001	4-224V-10900	Trimmer
RY1001	4-232V-15400	Relay
		(VARIABLE RESISTORS)
VR1001	4-222V-61705	1K ohms, ±30%, 0.1W
VR1002	4-222V-61707	5K ohms, ±30%, 0.1W
VR1003	4-222V-61705	1K ohms, ±30%, 0.1W
VR1004	4-222V-61705	1K ohms, ±30%, 0.1W
VR1005	4-222V-61709	20K ohms, ±30%, 0.1W
VR1006	4-222V-61708	10K ohms, ±30%, 0.1W
VR1007	4-222V-61708	10K ohms, ±30%, 0.1W
VR1008	4-222V-61706	2K ohms, ±30%, 0.1W
VR1009	4-222V-61705	1K ohms, ±30%, 0.1W
VR1010	4-222V-61705	1K ohms, ±30%, 0.1W
VR1011	4-222V-61706	2K ohms, ±30%, 0.1W
VR1012	4-222V-61708	10K ohms, ±30%, 0.1W
VR1014	4-222V-61707	5K ohms, ±30%, 0.1W
VR1015	4-222V-61706	2K ohms, ±30%, 0.1W
VR1016	4-222V-61704	500 ohms, ±30%, 0.1W
VR1017	4-222V-61713	500K ohms, ±30%, 0.1W
VR1018	4-222V-61705	1K ohms, ±30%, 0.1W
VR1019	4-222V-61707	5K ohms, ±30%, 0.1W
VR1020	4-222V-61708	10K ohms, ±30%, 0.1W
VR1021	4-222V-61706	2K ohms, ±30%, 0.1W
VR1022	4-222V-61710	50K ohms, ±30%, 0.1W
VR1023	4-222V-61707	5K ohms, ±30%, 0.1W
		(DELAY LINE)
DL1001	4-228V-15700	LC Pack
or	4-228V-15750	LC Pack
DL1002	4-228V-15850	LC Pack
or	4-284V-13500	Delay Line, 0.6μs
or	4-228V-15800	LC Pack, 600ns
DL1003	4-225V-18200	Cristal, 1H
or	4-284V-15000	Delay Line, 1H
DL1004	4-225V-18300	Cristal, 2H
or	4-284V-14200	Delay Line
or	4-284V-13300	Delay Line, 2H
DL1005	4-225V-14600	Cristal, 31.468Hz ±60Hz
or	4-225V-15400	Cristal, 1H
DL1006	4-228V-16100	LC Pack
		(COIL TRANSFORMERS)
T1001	4-253V-92800	HF Choke
or	4-253V-94900	HF Choke
T1002	4-259V-20300	HF Coil Trans.
T1003	4-259V-20200	HF Coil Trans.
T1006	4-258V-13800	OSC Coil
T1007	4-258V-13800	OSC Coil
T1008	4-258V-13800	OSC Coil
T1009	4-259V-24200	HF Coil Trans.
T1010	4-259V-20800	HF Coil Trans.
T1011	4-259V-20900	HF Coil Trans.
T1012	4-259V-24300	HF Coil Trans.
		(COILS)
L1001	4-253V-85822	HF Choke, 56μH, ±5%
L1002	4-253V-85817	HF Choke, 22μH, ±5%
L1003	4-253V-85927	HF Choke, 150μH, ±10%
or	4-253V-85827	HF Choke, 150μH, ±5%
L1004	4-253V-85827	HF Choke, 150μH, ±5%
L1005	4-253V-85816	HF Choke, 18μH, ±5%
or	4-253V-85916	HF Choke, 18μH, ±10%
L1006	4-253V-85819	HF Choke, 33μH, ±5%
L1007	4-253V-85823	HF Choke, 68μH, ±5%
L1008	4-253V-85827	HF Choke, 150μH, ±5%
L1009	4-253V-85816	HF Choke, 18μH, ±5%
or	4-253V-85916	HF Choke, 18μH, ±10%
L1010	4-253V-81817	HF Choke, 22μH, ±5%
L1011	4-253V-85828	HF Choke, 180μH, ±5%
L1012	4-253V-85830	HF Choke, 270μH, ±5%
L1013	4-253V-85828	HF Choke, 180μH, ±5%
L1014	4-253V-85816	HF Choke, 18μH, ±5%
or	4-253V-85916	HF Choke, 18μH, ±10%
L1015	4-253V-85816	HF Choke, 18μH, ±5%
or	4-253V-85916	HF Choke, 18μH, ±10%
L1016	4-253V-85828	HF Choke, 180μH, ±5%
L1017	4-253V-85830	HF Choke, 270μH, ±5%
L1018	4-253V-85828	HF Choke, 180μH, ±5%
L1020	4-253V-85926	HF Choke, 120μH, ±10%
or	4-253V-85826	HF Choke, 120μH, ±5%
L1021	4-253V-85926	HF Choke, 120μH, ±10%
or	4-253V-85826	HF Choke, 120μH, ±5%
L1022	4-253V-85821	HF Choke, 47μH, ±5%
L1023	4-253V-85820	HF Choke, 39μH, ±5%
L1024	4-253V-94200	HF Choke, 6.8mH, ±5%
L1025	4-253V-85830	HF Choke, 270μH, ±5%
L1026	4-253V-85830	HF Choke, 270μH, ±5%

Schematic Location	Parts No.	Description
L1027	4-253V-85812	HF Choke, 8.2μH, ±5%
L1028	4-253V-85833	HF Choke, 470μH, ±5%
L1029	4-253V-85823	HF Choke, 68μH, ±5%
L1030	4-253V-85822	HF Choke, 56μH, ±5%
L1031	4-253V-85825	HF Choke, 100μH, ±5%
L1032	4-253V-85831	HF Choke, 330μH, ±5%
L1033	4-253V-85819	HF Choke, 33μH, ±5%
L1034	4-253V-85815	HF Choke, 15μH, ±5%
L1035	4-253V-85812	HF Choke, 8.2μH, ±5%
L1036	4-253V-94300	HF Choke, 8.2μH, ±5%
L1038	4-253V-85818	HF Choke, 27μH, ±5%
L1039	4-253V-81819	HF Choke, 33μH, ±5%
		(IC's)
IC1001		IC, LA7020
IC1002		IC, LA7025
IC1003		IC, LA7013
IC1005		IC, M51437P
IC1006		IC, M51438P
IC1007		IC, M50180P
IC1008		IC, LA7016
IC1009		IC, M51439P
		(TRANSISTORS)
Q1001		2SC536E or F or 2SC945P or Q
Q1002		2SA933Q or R
Q1003		2SC930D or E
Q1004		2SC930D or E
Q1005		2SA608E or F
Q1009		2SC930D or E
Q1010		2SA838B or C
Q1011		2SA838B or C
Q1012		2SC930D or E
Q1013		2SC930D or E
Q1014		2SC930D or E
Q1015		2SA838B or C
Q1016		2SC930D or E
Q1017		2SC1741Q or R
Q1019		2SC536E or F or 2SC945P or Q
Q1020		2SB544D or E
Q1021		2SC536E or F or 2SC945P or Q
Q1022		2SC930D or E
Q1024		2SC536E or F or 2SC945P or Q
Q1025		2SC536E or F or 2SC945P or Q
Q1026		2SC930D or E
Q1027		2SA838B or C
Q1028		2SC930D or E
Q1029		2SC930D or E
Q1030		2SC930D or E
Q1031		2SC930D or E
Q1032		2SC930D or E
Q1033		2SC930D or E
Q1034		2SC930D or E
Q1035		2SA838B or C
Q1036		2SC930D or E
Q1037		2SC930D or E
Q1038		2SC930D or E
Q1039		2SC930D or E
Q1040		2SC930D or E
Q1041		2SC930D or E
Q1042		2SC930D or E
Q1043		2SC536E or F or 2SC945P or Q
Q1044		2SC930D or E
Q1045		2SC536E or F or 2SC945P or Q
Q1046		2SC536E or F or 2SC945P or Q
Q1047		2SC1645B

Schematic Location	Parts No.	Description
Q1048		2SA608E or F
Q1049		2SC536E or F or 2SC945P or Q
Q1050		2SC536E or F or 2SC945P or Q
Q1051		2SA838B or C
Q1052		2SC930D or E
Q1053		2SC930D or E
Q1054		2SC930D or E
Q1055		2SC930D or E
Q1056		2SC930D or E
Q1063		2SC536E or F or 2SC945P or Q
Q1064		2SC930D or E
		(DIODES)
D1001		1S2473
D1002		1S2473
D1003		1S2473
D1004		1S2473
D1006		1SS133
D1007		1S2473
D1008		1S2473
D1009		1S2473
D1010		1S2473
D1011		1S2473
D1012		1S2473
D1013		1S2473
D1014		1SS133
D1015		1SS133
		(CAPACITORS)
C1001		Elect., 4.7mfd (M), 25V
C1002		Mylar, 0.0082mfd (J), 50V
C1003		Mylar, 0.022mfd (J), 50V
C1004		Elect., 10mfd (M), 16V
C1005		Elect., 100mfd (M), 10V
C1006		Ceramic, 75pF (J), 50V
C1007		Ceramic, 15pF (J), 50V
C1008		Ceramic, 150pF (K), 50V
C1009		Elect., 22mfd (M), 16V
C1010		Elect., 10mfd (M), 16V
C1011		Ceramic, 150pF (K), 50V
C1012		Mylar, 0.1mfd (J), 50V
C1013		BL Ceramic, 0.047mfd (K), 25V
C1014		Elect., 47mfd (M), 16V
C1015		BL Ceramic, 0.01mfd (N), 25V
C1016		Ceramic, 680pF (K), 50V
C1017		Ceramic, 330pF (K), 50V
C1018		BL Ceramic, 0.01mfd (N), 25V
C1019		BL Ceramic, 0.01mfd (N), 25V
C1020		Elect., 100mfd (M), 10V
C1021		BL Ceramic, 0.047mfd (K), 25V
C1022		Ceramic, 180pF (K), 50V
C1023		Ceramic, 390pF (K), 50V
C1024		Ceramic, 430pF (K), 50V
C1025		Ceramic, 100pF (J), 50V, CH
C1026		Ceramic, 8pF (C), 50V
C1027		Elect., 47mfd (M), 16V
C1028		BL Ceramic, 0.047mfd (K), 25V
C1030		BL Ceramic, 0.01mfd (N), 25V
C1031		BL Ceramic, 0.047mfd (K), 25V
C1032		Elect., 47mfd (M), 16V
C1033		BL Ceramic, 0.047mfd (K), 25V
C1034		Ceramic, 39pF (J), 50V
C1035		Ceramic, 10pF (J), 50V
C1036		Ceramic, 390pF (K), 50V
C1037		Ceramic, 300pF (K), 50V
C1038		Ceramic, 180pF (K), 50V
C1039		Ceramic, 120pF (J), 50V

Schematic Location	Parts No.	Description
C1040		Elect., 100mfd (M), 10V
C1041		Ceramic, 51pF (J), 50V, CH
C1042		BL Ceramic, 0.022mfd (N), 16V
C1043		Ceramic, 7pF (C), 50V
C1044		Ceramic, 27pF (J), 50V
C1045		Ceramic, 27pF (J), 50V
C1046		Ceramic, 7pF (C), 50V
C1047		Elect., 100mfd (M), 10V
C1048		Ceramic, 68pF (J), 50V
C1049		BL Ceramic, 0.01mfd (N), 25V
C1050		BL Ceramic, 0.047mfd (K), 25V
C1051		BL Ceramic, 0.047mfd (K), 25V
C1052		Elect., 47mfd (M), 16V
C1053		Elect., 4.7mfd (M), 25V
C1054		Ceramic, 27pF (J), 50V
C1055		BL Ceramic, 0.01mfd (N), 25V
C1056		BL Ceramic, 0.01mfd (N), 25V
C1057		Elect., 47mfd (M), 16V
C1058		BL Ceramic, 0.01mfd (N), 25V
C1059		Ceramic, 82pF (J), 50V
C1060		Ceramic, 7pF (C), 50V
C1061		Ceramic, 27pF (J), 50V
C1062		Ceramic, 27pF (J), 50V
C1063		Ceramic, 7pF (C), 50V
C1064		Ceramic, 75pF (J), 50V, CH
C1065		BL Ceramic, 0.01mfd (N), 25V
C1066		Elect., 47mfd (M), 16V
C1067		BL Ceramic, 0.047mfd (K), 25V
C1068		Elect., 100mfd (M), 10V
C1069		Elect., 100mfd (M), 10V
C1070		Ceramic, 820pF (K), 50V
C1071		BL Ceramic, 0.0027mfd (N), 50V
C1072		Elect., 100mfd (M), 10V
C1073		Elect., 1mfd (M), 50V
C1074		Ceramic, 120pF (J), 50V
C1075		Ceramic, 100pF (J), 50V
C1077		BL Ceramic, 0.01mfd (N), 25V
C1078		Elect., 100mfd (M), 10V
C1080		Elect., 1000mfd (M), 10V
C1081		Ceramic, 510pF (K), 50V
C1082		BL Ceramic, 0.047mfd (K), 25V
C1083		Elect., 47mfd (M), 16V
C1084		Elect., 22mfd (M), 16V
C1086		BL Ceramic, 0.022mfd (K), 25V
C1087		BL Ceramic, 0.01mfd (N), 25V
C1088		BL Ceramic, 0.01mfd (N), 25V
C1089		Elect., 47mfd (M), 16V
C1090		BL Ceramic, 0.047mfd (K), 25V
C1091		BL Ceramic, 0.01mfd (N), 25V
C1092		Ceramic, 240pF (K), 50V
C1093		Ceramic, 56pF (J), 50V
C1094		BL Ceramic, 0.01mfd (N), 25V
C1096		BL Ceramic, 0.01mfd (N), 25V
C1097		BL Ceramic, 0.01mfd (N), 25V
C1098		Ceramic, 220pF (K), 50V
C1099		BL Ceramic, 0.01mfd (N), 25V
C1100		Ceramic, 27pF (J), 50V
C1101		NP Elect., 22mfd (M), 25V
C1102		NP Elect., 22mfd (M), 25V
C1103		Elect., 3.3mfd (M), 50V
C1104		Elect., 3.3mfd (M), 50V
C1105		Elect., 0.33mfd (M), 50V
C1106		Elect., 1mfd (M), 50V
C1107		BL Ceramic, 0.047mfd (K), 25V
C1108		Elect., 47mfd (M), 16V
C1109		BL Ceramic, 0.01mfd (N), 25V

Schematic Location	Parts No.	Description
C1110		Elect., 47mfd (M), 16V
C1111		BL Ceramic, 0.047mfd (K), 25V
C1112		Ceramic, 39pF (J), 50V
C1113		Elect., 47mfd (M), 16V
C1114		BL Ceramic, 0.047mfd (K), 25V
C1115		Elect., 47mfd (M), 16V
C1116		BL Ceramic, 0.047mfd (K), 25V
C1117		Ceramic, 33pF (J), 50V
C1118		BL Ceramic, 0.01mfd (N), 25V
C1119		BL Ceramic, 0.01mfd (N), 25V
C1120		Ceramic, 56pF (J), CH
C1121		Ceramic, 220pF (J), CH
C1122		BL Ceramic, 0.047mfd (K), 25V
C1123		BL Ceramic, 0.01mfd (N), 25V
C1124		BL Ceramic, 0.01mfd (N), 25V
C1125		Elect., 47mfd (M), 16V
C1126		BL Ceramic, 0.047mfd (K), 25V
C1127		BL Ceramic, 0.01mfd (N), 25V
C1128		Ceramic, 27pF (J), 50V, CH
C1129		BL Ceramic, 0.01mfd (N), 25V
C1130		Mylar, 0.01mfd (J), 50V
C1131		NP Elect., 1mfd (M), 50V
C1132		Mylar, 0.01mfd (J), 50V
C1133		BL Ceramic, 0.01mfd (N), 25V
C1134		Elect., 47mfd (M), 16V
C1135		BL Ceramic, 0.047mfd (K), 25V
C1136		BL Ceramic, 0.01mfd (N), 25V
C1137		Ceramic, 27pF (J), 50V, CH
C1138		BL Ceramic, 0.01mfd (N), 25V
C1139		Tantalum, 2.2mfd (K), 25V
or		Elect., 2.2mfd (M), 25V
C1140		Mylar, 0.022mfd (J), 50V
C1141		Ceramic, 0.001mfd (K), 50V
C1142		Ceramic, 0.001mfd (K), 50V
C1143		Elect., 10mfd (M), 16V
C1144		Mylar, 820pF (J), 50V
C1145		Tantalum, 0.22mfd (K), 25V
or		Aluminium, 0.22mfd (M), 25V
C1146		Tantalum, 4.7mfd (K), 25V
or		Elect., 4.7mfd (M), 25V
C1147		Ceramic, 39pF (J), 50V, CH
C1148		Ceramic, 22pF (J), 50V, CH
C1149		Elect., 4.7mfd (M), 25V
C1150		Ceramic, 220pF (K), 50V
C1151		BL Ceramic, 0.01mfd (N), 25V
C1152		Ceramic, 220pF (K), 50V
C1153		BL Ceramic, 0.047mfd (K), 25V
C1154		Elect., 47mfd (M), 16V
C1155		Elect., 47mfd (M), 16V
C1156		BL Ceramic, 0.047mfd (K), 25V
C1157		BL Ceramic, 0.047mfd (K), 25V
C1158		Ceramic, 22pF (J), 50V
C1159		Ceramic, 68pF (J), 50V
C1160		Ceramic, 22pF (J), 50V
C1161		BL Ceramic, 0.047mfd (K), 25V
C1162		BL Ceramic, 0.01mfd (N), 25V
C1163		BL Ceramic, 0.01mfd (N), 25V
C1164		BL Ceramic, 0.01mfd (N), 25V
C1165		BL Ceramic, 0.047mfd (K), 25V
C1166		BL Ceramic, 0.01mfd (N), 25V
C1167		BL Ceramic, 0.01mfd (N), 25V
C1168		BL Ceramic, 0.01mfd (N), 25V
C1169		Elect., 47mfd (M), 16V
C1170		BL Ceramic, 0.047mfd (K), 25V
C1171		BL Ceramic, 0.01mfd (N), 25V
C1172		Ceramic, 100pF (J), CH

Schematic Location	Parts No.	Description
C1173		Mylar, 0.001mfd (J), 50V
C1174		Elect., 4.7mfd (M), 25V
C1175		Elect., 1mfd (M), 50V
C1176		Elect., 47mfd (M), 16V
C1177		BL Ceramic, 0.047mfd (K), 25V
C1178		Ceramic, 120pF (J), 50V
C1179		BL Ceramic 0.01mfd (K), 25V
C1180		Mylar, 0.0022mfd (J), 50V
C1181		Mylar, 0.0047mfd (J), 50V
C1182		Ceramic, 220pF (J), 50V, CH
C1183		Elect., 47mfd (M), 16V
C1184		BL Ceramic, 0.047mfd (K), 25V
C1185		Mylar, 0.0068mfd (J), 50V
C1186		Elect., 0.47mfd (M), 50V
C1187		BL Ceramic, 0.015mfd (N), 25V
C1188		Ceramic, 330pF (K), 50V
C1189		Ceramic, 100pF (J), 50V
C1190		Elect., 10mfd (M), 16V
C1191		Elect., 10mfd (M), 16V
C1192		Elect., 10mfd (M), 16V
C1193		Elect., 47mfd (M), 16V
C1194		BL Ceramic, 0.047mfd (K), 25V
C1197		BL Ceramic, 0.01mfd (N), 25V
C1198		Elect., 0.47mfd (M), 50V
C1199		BL Ceramic, 0.047mfd (K), 25V
C1200		Ceramic, 100pF (J), 50V, CH
C1201		Ceramic, 100pF (J), 50V, CH
C1202		Elect., 4.7mfd (M), 25V
C1203		Elect., 47mfd (M), 16V
C1204		BL Ceramic, 0.047mfd (K), 25V
C1205		BL Ceramic, 0.015mfd (N), 25V
C1206		BL Ceramic, 0.0027mfd (N), 50V
C1208		BL Ceramic, 0.01mfd (N), 25V
C1210		BL Ceramic, 0.047mfd (K), 25V
C1211		Elect., 1mfd (M), 50V
C1213		BL Ceramic, 0.047mfd (K), 25V
C1214		Elect., 4.7mfd (M), 25V
C1215		Ceramic, 100pF (J), 50V
C1216		Ceramic, 47pF (J), 50V
C1217		Ceramic, 0.01mfd (Z), 50V
C1218		Ceramic, 22pF (J), 50V, CH
C1219		BL Ceramic, 0.01mfd (K), 25V
C1220		BL Ceramic, 0.01mfd (K), 25V
C1221		Ceramic, 27pF (J), 50V, CH
C1222		BL Ceramic, 0.022mfd (K), 25V
C1223		Ceramic, 82pF (J), 50V, CH
C1224		Ceramic, 82pF (J), 50V, CH
C1225		BL Ceramic, 0.022mfd (K), 25V
C1226		BL Ceramic, 0.01mfd (K), 25V
C1227		Ceramic, 82pF (J), 50V, CH
C1228		Elect., 10mfd (M), 16V
C1229		Ceramic, 27pF (J), 50V
C1230		Mylar, 0.0056mfd (K), 50V
C1231		Mylar, 0.001mfd (K), 50V
C1232		Mylar, 0.01mfd (K), 50V
C1233		Elect., 1mfd (M), 50V
C1234		Elect., 47mfd (M), 16V
C1235		BL Ceramic, 0.047mfd (K), 25V
C1236		Ceramic, 470pF (J), 50V
C1237		BL Ceramic, 0.047mfd (K), 25V
C1238		Elect., 47mfd (M), 16V
C1239		Mylar, 0.001mfd (K), 50V
C1240		Mylar, 0.001mfd (K), 50V
C1241		BL Ceramic, 0.01mfd (K), 25V
C1242		BL Ceramic, 0.01mfd (K), 25V
C1243		Elect., 47mfd (M), 16V

Schematic Location	Parts No.	Description
C1244		BL Ceramic, 0.047mfd (K), 25V
C1245		BL Ceramic, 0.01mfd (K), 25V
C1246		BL Ceramic, 0.01mfd (K), 25V
C1247		BL Ceramic, 0.01mfd (K), 25V
C1248		BL Ceramic, 0.01mfd (K), 25V
C1249		Elect., 10mfd (M), 16V
C1250		Elect., 4.7mfd (M), 25V
C1251		BL Ceramic, 0.0012mfd (K), 25V
C1252		BL Ceramic, 0.0012mfd (K), 25V
C1253		Ceramic, 51pF (J), 50V
C1254		Ceramic, 68pF (J), 50V
C1255		Mylar, 0.22mfd (J), 50V
C1256		Ceramic, 39pF (J), 50V
C1259		Elect., 10mfd (M), 16V
C1260		Ceramic, 82pF (J), 50V
C1261		Ceramic, 0.001mfd (K), 50V
C1262		BL Ceramic, 0.047mfd (K), 25V
C1263		Elect., 47mfd (M), 16V
C1270		BL Ceramic, 0.047mfd (K), 25V
C1271		Elect., 47mfd (M), 16V
		(RESISTORS)
R1001		1.8K ohms
R1002		3.9K ohms
R1003		15K ohms
R1004		10K ohms
R1005		10K ohms
R1006		220 ohms
R1007		10K ohms
R1008		75 ohms
R1009		100 ohms
R1010		10K ohms
R1011		10K ohms
R1013		470 ohms, 1/6W
R1015		56K ohms, 1/6W
R1016		2K ohms, 1/6W
R1017		1K ohms
R1018		1K ohms
R1019		1M ohms
R1020		1.2K ohms
R1021		9.1K ohms
R1022		1K ohms
R1023		10K ohms
R1024		1.6K ohms
R1025		1K ohms
R1026		330 ohms
R1027		22K ohms
R1028		47K ohms
R1029		1K ohms
R1030		10K ohms
R1031		1K ohms
R1032		120K ohms
R1033		820 ohms
R1034		3.3K ohms
R1035		22K ohms
R1036		150 ohms
R1037		130 ohms
R1038		1.6K ohms
R1039		10K ohms
R1040		1.6K ohms
R1041		2.7M ohms
R1042		2.2K ohms
R1043		1.2K ohms, 1/6W
R1047		3.9K ohms
R1048		10K ohms
R1049		1.1K ohms

Schematic Location	Parts No.	Description
R1052		1K ohms
R1054		240 ohms
R1055		270 ohms
R1056		1.6K ohms
R1057		820 ohms
R1058		1.8K ohms
R1059		10K ohms
R1060		1K ohms
R1061		620 ohms
R1062		560 ohms
R1063		560 ohms
R1064		2.7K ohms
R1065		6.2K ohms
R1066		300 ohms
R1067		5.6K ohms
R1068		3.3K ohms
R1069		3.3K ohms
R1070		3.3K ohms
R1071		1K ohms
R1073		1K ohms
R1074		1K ohms
R1075		1.8K ohms
R1076		510K ohms
R1077		200K ohms, 1/6W
R1078		220 ohms, 1/6W
R1079		100 ohms
R1080		33K ohms
R1081		33K ohms
R1082		470 ohms
R1083		270 ohms
R1084		270 ohms
R1085		33K ohms
R1086		33K ohms
R1087		1K ohms
R1089		100 ohms
R1091		1K ohms
R1092		3.3K ohms
R1093		3.3K ohms
R1094		3.3K ohms
R1095		3.3K ohms
R1096		100 ohms
R1097		470 ohms
R1098		47 ohms
R1099		680 ohms
R1100		13K ohms
R1101		9.1K ohms
R1102		1K ohms, 1/6W
R1103		560 ohms
R1104		10K ohms
R1107		68 ohms
R1108		750 ohms
R1109		120 ohms
R1111		1K ohms
R1112		33K ohms
R1113		33K ohms
R1114		1.5K ohms
R1115		10K ohms
R1116		22K ohms
R1117		22K ohms
R1119		1K ohms
R1120		240 ohms
R1121		180K ohms
R1122		220K ohms
R1123		4.7K ohms
R1124		100K ohms
R1128		10K ohms
R1129		10K ohms
R1130		1K ohms
R1131		1.8K ohms
R1132		1K ohms
R1133		1K ohms
R1134		100 ohms
R1135		56K ohms, 1/6W
R1136		56K ohms, 1/6W
R1137		100 ohms
R1138		2.2K ohms
R1139		4.7K ohms
R1140		22K ohms
R1141		1K ohms
R1142		100 ohms
R1143		4.7K ohms, 1/6W
R1144		33K ohms
R1145		68K ohms
R1146		1K ohms
R1147		8.2K ohms
R1148		1K ohms
R1149		51K ohms
R1150		100 ohms
R1151		5.1K ohms
R1152		22K ohms
R1153		51K ohms
R1154		10K ohms
R1155		3.3K ohms
R1156		2K ohms
R1157		3.3K ohms
R1158		2.2K ohms
R1159		1.5K ohms
R1160		10K ohms
R1161		10K ohms
R1162		1K ohms
R1163		2.2K ohms
R1164		3.3K ohms
R1165		43K ohms
R1166		2K ohms
R1167		8.2K ohms
R1168		3.9K ohms
R1169		3.9K ohms
R1170		3.3K ohms
R1171		15K ohms
R1172		100K ohms
R1173		6.8K ohms
R1174		2.4K ohms
R1175		470 ohms
R1176		1K ohms
R1177		150 ohms
R1178		4.7K ohms
R1179		1.5K ohms
R1180		6.8K ohms
R1181		3.3K ohms
R1182		2.2K ohms
R1183		4.7K ohms
R1184		1.6K ohms
R1185		150 ohms
R1186		510 ohms
R1187		43K ohms
R1188		15K ohms
R1190		2.2K ohms
R1191		1.3K ohms, 1/6W
R1192		750 ohms
R1193		390 ohms
R1194		390 ohms
R1195		390 ohms

Schematic Location	Parts No.	Description
R1196		390 ohms
R1197		2.2K ohms
R1198		390 ohms
R1199		510 ohms
R1200		11K ohms
R1201		7.5K ohms
R1202		2K ohms
R1203		1K ohms
R1204		68K ohms
R1205		24K ohms
R1206		1K ohms
R1207		1K ohms
R1208		15K ohms
R1209		10K ohms
R1210		10K ohms
R1211		82K ohms
R1212		5.1K ohms
R1213		Metal Glaze, 1K ohms, ±1%
R1214		Metal Glaze, 3.9K ohms, ±1%
R1215		10K ohms, 1/6W
R1216		2.2K ohms, 1/6W
R1217		10K ohms
R1218		10K ohms
R1219		15K ohms
R1220		18K ohms
R1221		82K ohms
R1222		4.3K ohms
R1223		1.2K ohms
R1224		47K ohms
R1225		1K ohms
R1226		2K ohms
R1227		100K ohms
R1228		4.3K ohms
R1229		6.2K ohms, 1/6W
R1230		10K ohms, 1/6W
R1234		3.6K ohms
R1237		5.6K ohms
R1238		4.7K ohms
R1239		100K ohms
R1240		10K ohms, 1/6W
R1241		16K ohms, 1/6W
R1242		47K ohms, 1/6W
R1243		10K ohms
R1244		1M ohms
R1245		6.8K ohms
R1246		3K ohms
R1247		6.8K ohms
R1248		39K ohms
R1249		47K ohms
R1250		150K ohms
R1251		100K ohms
R1252		22K ohms
R1253		22K ohms
R1254		47K ohms
R1255		10K ohms
R1259		560 ohms
R1260		510K ohms
R1261		750 ohms
R1262		220K ohms
R1263		100K ohms
R1264		100K ohms
R1265		1K ohms
R1266		1K ohms
R1267		2K ohms
R1268		100K ohms
R1269		2.2K ohms

Schematic Location	Parts No.	Description
R1270		10K ohms, 1/6W
R1271		5.1K ohms, 1/6W
R1272		3.9K ohms, 1/6W
R1273		3K ohms, 1/6W
R1274		15K ohms, 1/6W
R1275		200 ohms, 1/6W
R1276		12K ohms, 1/6W
R1277		6.2K ohms, 1/6W
R1278		2.7K ohms, 1/6W
R1279		1.8K ohms, 1/6W
R1280		470 ohms, 1/6W
R1281		15K ohms
R1282		20K ohms
R1283		10K ohms, 1/6W
R1284		15K ohms, 1/6W
R1285		56K ohms, 1/6W
R1286		4.7K ohms, 1/6W
R1287		10K ohms, 1/6W
R1288		68K ohms, 1/6W
R1289		62K ohms, 1/6W
R1290		10K ohms, 1/6W
R1291		15K ohms, 1/6W
R1292		120 ohms, 1/6W
R1293		150 ohms, 1/6W
R1294		47 ohms, 1/6W
R1295		390 ohms, 1/6W
R1296		470 ohms, 1/6W
R1297		12K ohms, 1/6W
R1298		10K ohms, 1/6W
R1299		2.2K ohms, 1/6W
R1300		1K ohms, 1/6W
R1301		7.5K ohms, 1/6W
R1302		10K ohms, 1/6W
R1303		470 ohms, 1/6W
R1304		8.2K ohms, 1/6W
R1305		680 ohms, 1/6W
R1306		4.7K ohms, 1/6W
R1307		2.2K ohms, 1/6W
R1317		1K ohms, 1/6W
R1318		1K ohms, 1/6W
R1327		110 ohms, 1/6W
R1328		10K ohms, 1/6W
R1329		33K ohms, 1/6W
R1330		10K ohms, 1/6W
R1331		6.8K ohms
		***AUDIO CIRCUIT ... Location No. 2001~**
T2001	4-258V-14740	OSC Coil Transformer
		(VARIABLE RESISTORS)
VR2001	4-222V-65906	10K ohms
VR2002	4-222V-65906	10K ohms
VR2003	4-222V-65910	200K ohms
		(COILS)
L2001	4-253V-95600	HF Choke, 27mH
L2002	4-253V-96900	HF Choke, 7mH
L2003	4-253V-95800	HF Choke, 27mH
L2004	4-253V-84110	HF Choke
		(IC's)
IC2001		IC, BA5102
or		IC, LA7040

Schematic Location	Part No.	Description
		(TRANSISTORS)
Q2001		2SD1011R or S or T
Q2002		2SD1011R or S or T
Q2003		2SC945P or Q
Q2004		2SA1016F or G
Q2005		2SC2603F
Q2006		2SC2603F
Q2007		2SD438E or F
		(DIODES)
D2001		1S2473
D2002		1S2473
D2003		1S2473
D2004		1S2473
		(CAPACITORS)
C2001		Elect., 2.2mfdd (M), 50V
C2002		Elect., 47mfd (M), 6.3V
C2003		Elect., 22mfd (M), 10V
C2005		Elect., 100mfd (M), 10V
C2006		Elect., 22mfd (M), 10V
C2007		Elect., 4.7mfd (M), 25V
C2008		Elect., 4.7mfd (M), 25V
C2009		Elect., 0.47mfd (M), 50V
C2010		BL Ceramic, 0.033mfd (K), 25V
C2013		Elect., 4.7mfd (M), 25V
C2014		Elect., 47mfd (M), 10V
C2015		Ceralic, 220pF (K), 50V
C2016		Elect., 47mfd (M), 6.3V
C2017		Elect., 100mfd (M), 10V
C2018		Elect., 0.47mfd (M), 50V
C2019		BL Ceramic, 0.0047mfd (K), 25V
C2020		Elect., 3.3mfd (M), 50V
C2021		BL Ceramic, 0.012mfd (K), 25V
C2023		Elect., 2.2mfd (M), 50V
C2024		Elect., 10mfd (M), 16V
C2025		Ceramic, 200pF (J), 50V
C2026		Ceramic, 0.0012mfd (K), 50V
C2027		Ceramic, 220pF (J), 50V
C2028		Polypropylene, 0.018mfd (K), 200V
C2029		Elect., 100mfd (M), 10V
C2030		BL Ceramic, 0.033mfd (K), 25V
C2031		BL Ceramic, 0.01mfd (K), 25V
C2032		BL Ceramic, 0.01mfd (K), 25V
C2033		BL Ceramic, 0.01mfd (K), 25V
C2034		Elect., 33mfd (M), 10V
C2035		Ceramic, 0.0047mfd (K), 50V
C2036		BL Ceramic, 0.047mfd (K), 25V
		(RESISTORS)
R2001		47K ohms
R2002		390 ohms
R2003		2.2K ohms
R2004		18K ohms
R2005		33K ohms
R2006		2.2M ohms
R2007		47K ohms
R2008		1K ohms
R2009		5.6K ohms
R2010		3.3K ohms
R2011		470 ohms
R2014		2.2K ohms
R2015		10K ohms
R2016		39K ohms
R2017		10K ohms
R2018		100K ohms

Schematic Location	Part No.	Description
R2020		100K ohms
R2021		10K ohms
R2022		15K ohms
R2023		4.7K ohms
R2024		390 ohms
R2025		2.2K ohms
R2026		120K ohms
R2028		180 ohms
R2031		10K ohms
R2032		10K ohms
R2033		2.2K ohms
R2034		2.2K ohms
R2035		330 ohms
R2036		8.2K ohms
R2037		Metal Glaze, 10 ohms
R2038		10K ohms
R2039		10K ohms
R2040		3.3K ohms
R2041		15K ohms
R2042		1 ohm

(2) VP-1 PCB. ELECTRICAL PARTS (143-9-1100-02200)

* All resistors are of carbon type, ±5%, 1/4 watt unless otherwise noted.

Schematic Location	Parts No.	Description
		(VARIABLE RESISTORS)
VR1501	4-222V-62811	4.7K ohms
VR1502	4-222V-62809	2.2K ohms
VR1503	4-222V-62809	2.2K ohms
VR1504	4-222V-62807	1K ohms
VR1505	4-222V-62810	3.3K ohms
		(COIL TRANSFORMERS & COILS)
T1501	4-288V-10800	Step-up Trans.
T1502	4-288V-10800	Step-up Trans.
L1501	4-253V-89255	HF Choke, 0.56μH
L1502	4-253V-89255	HF Choke, 0.56μH
L1503	4-253V-85245	HF Choke, 1mH
L1504	4-253V-85826	HF Choke, 120μH
L1505	4-253V-88317	HF Choke, 2.2mH
L1506	4-253V-85245	HF Choke, 1mH
L1508	4-253V-88323	HF Choke, 6.8mH
L1509	4-253V-88323	HF Choke, 6.8mH
L1510	4-253V-85815	HF Choke, 15μH
L1511	4-253V-85815	HF Choke, 15μH
L1512	4-253V-85813	HF Choke, 10μH
L1513	4-253V-85816	HF Choke, 18μH
		(IC's & TRANSISTORS)
IC1501		IC, LA7027
Q1502		FET 2SK152-1 or 2 or 3
Q1503		FET 2SK152-1 or 2 or 3
Q1504		2SC536E or F
Q1505		2SC536E or F
Q1506		2SC536E or F
Q1507		2SC930E or F
Q1508		2SA838B or C
Q1509		2SA564Q or 2SA838B or C
Q1510		2SC1815Y
Q1511		2SC930E or F

Schematic Location	Part No.	Description
		(DIODES)
D1501		1SS133
D1502		1SS133
D1503		1SS133
D1504		1SS133
D1505		1SS133
D1507		1SS133
D1509		1SS133
D1510		1SS133
D1511		1SS133
D1512		1SS133
D1513		1SS133
D1514		1S2473 or 1S1555
		(CAPACITORS)
C1501		BL Ceramic, 0.022mfd (M), 25V
C1502		BL Ceramic, 0.022mfd (M), 25V
C1503		BL Ceramic, 0.047mfd (M), 25V
C1054		BL Ceramic, 0.01mfd (K), 25V
C1505		BL Ceramic, 0.022mfd (M), 25V
C1506		BL Ceramic, 0.022mfd (M), 25V
C1507		BL Ceramic, 0.022mfd (M), 25V
C1508		BL Ceramic, 0.047mfd (M), 25V
C1509		BL Ceramic, 0.01mfd (K), 25V
C1510		Tantalum, 10mfd (M), 16V
C1511		BL Ceramic, 0.022mfd (M), 25V
C1512		BL Ceramic, 0.022mfd (M), 25V
C1513		Ceramic, 680pF (J), 50V
C1514		Elect., 10mfd (M), 10V
C1515		BL Ceramic, 0.01mfd (K), 25V
C1516		Ceramic, 470pF (J), 50V
C1517		Ceramic, 470pF (J), 50V
C1518		Ceramic, 100pF (J), 50V
C1519		BL Ceramic, 0.0027mfd (M), 25V
C1520		BL Ceramic, 0.0047mfd (M), 25V
C1524		Ceramic, 47pF (J), 50V
C1525		Ceramic, 56pF (J), 50V
C1526		BL Ceramic, 0.0047mfd (M), 25V
C1528		Elect., 10mfd (M), 10V
C1531		BL Ceramic, 0.01mfd (K), 25V
C1532		Ceramic, 100pF (J), 50V
C1533		BL Ceramic, 0.01mfd (K), 25V
C1534		BL Ceramic, 0.022mfd (M), 25V
C1535		Elect., 47mfd (M), 16V
C1536		Elect., 0.47mfd (M), 25V
C1537		Ceramic, 36pF (J), 50V
C1538		Ceramic, 18pF (J), 50V
C1539		Ceramic, 5pF (J), 50V
C1540		Ceramic, 5pF (J), 50V
C1541		BL Ceramic, 0.01mfd (N), 25V
		(RESISTORS)
R1501		3.3K ohms, 1/6W
R1502		390 ohms, 1/6W
R1503		10K ohms, 1/6W
R1504		620 ohms, 1/6W
R1505		390 ohms, 1/6W
R1506		10K ohms, 1/6W
R1507		3.3K ohms, 1/6W
R1508		390 ohms, 1/6W
R1509		620 ohms, 1/6W
R1510		390 ohms, 1/6W
R1511		10K ohms, 1/6W
R1512		5.6K ohms, 1/6W
R1513		100 ohms, 1/6W
R1514		620 ohms, 1/6W

Schematic Location	Part No.	Description
R1515		33K ohms, 1/6W
R1516		5.6K ohms, 1/6W
R1517		4.7K ohms, 1/6W
R1518		2.2K ohms, 1/6W
R1519		390 ohms, 1/6W
R1520		22K ohms, 1/6W
R1521		Non Flammable, 8.2 ohms
R1524		1.2K ohms, 1/6W
R1525		560 ohms, 1/6W
R1526		1K ohms, 1/6W
R1527		1K ohms, 1/6W
R1528		1K ohms, 1/6W
R1529		1K ohms, 1/6W
R1530		2.2K ohms, 1/6W
R1531		2.2K ohms, 1/6W
R1532		10K ohms, 1/6W
R1534		Non Flammable, 8.2 ohms
R1535		220 ohms, 1/6W
R1536		1.5K ohms, 1/6W
R1537		1.5K ohms, 1/6W
R1538		3.3 ohms, 1/6W
R1539		470 ohms, 1/6W
R1542		Metal Glaze, 8.2 ohms
R1543		16K ohms, 1/6W
R1544		4.7K ohms, 1/6W
R1545		56K ohms, 1/6W
R1546		10K ohms, 1/6W
R1547		1K ohms, 1/6W
R1548		680 ohms, 1/6W
R1549		390 ohms, 1/6W
R1550		82K ohms, 1/6W
R1551		10K ohms, 1/6W
R1552		1K ohms, 1/6W
R1553		7.5 ohms, 1/6W
R1554		620 ohms, 1/6W
R1555		620 ohms, 1/6W
R1556		Non Flammable, 82 ohms
R1557		Non Flammable, 39 ohms
R1558		100 ohms, 1/6W
R1559		10K ohms, 1/6W
R1560		10K ohms

(3) SY-1 PCB. ELECTRICAL PARTS (143-0-230V-21300)

* All resistors are of carbon type, 1/6 watt, unless otherwise noted.

Schematic Location	Parts No.	Description
CF3001	4-953V-03400	Filter
RA3001	4-956V-10361	R-Pack, 10K ohms x 11, ±10%
or	4-957V-10311	R-Pack, 10K ohms x 11, ±5%
RA3002	4-956V-10362	R-Pack, 10K ohms x 12, ±10%
or	4-957V-10312	R-Pack, 10K ohms x 12, ±5%
RA3003	4-956V-10361	R-Pack, 10K ohms x 11, ±10%
or	4-957V-10311	R-Pack, 10K ohms x 11, ±5%
RA3004	4-956V-10357	R-Pack, 10K ohms x 7, ±10%
or	4-957V-10307	R-Pack, 10K ohms x 7, ±5%
		(IC's)
IC3001		LM6402A127
IC3002		LC7800
IC3003		LA7011

Schematic Location	Part No.	Description
IC3004		LA2400
IC3005		M54543L
IC3006		BA6209
IC3007		TC4001BP or LC4001B or μPD4001BC
IC3008		TC4069UBP or μPD4069UBP
IC3009		TC4538BP or CD4538BE or MC14538B or HD14538BP
IC3010		TC4001BP or LC4001B or μPD4001BC
		(TRANSISTORS)
Q3011		2SC2274E or F
Q3012		2SC536E or F
Q3013		2SC536E or F
Q3015		2SA937Q or R
Q3016		2SD325E or F
Q3017		2SC2021Q or R
Q3018		2SA937Q or R
Q3019		2SC3399
Q3020		2SC3399
Q3021		2SC536E or F
Q3024		2SC536E or F
Q3025		2SC2021Q or R
Q3026		2SC536E or F
Q3027		2SA608E or F
		(DIODES)
D3001		Zener, GZA5.6Y or RD5.6E B1
D3002		GMA01
D3003	4-202V-13300	MC911
D3005		GMA01
D3006		Zener, HZ3A3 or GZA2.7Y
D3007		Zener, GZA4.7Y or RD4.7E B3
D3008		Zener, GZA7.5Y or RD7.5E B1
D3009		GMA01
D3010		GMA01
D3011	4-202V-13300	MC911
D3013		GMA01
D3014		GMA01
D3015		GMA01
D3016		DS442
D3017		DS442
D3018		GMA01
D3019		DS442
D3020		GMA01
D3021	4-202V-13300	MC911
D3022		GMA01
D3023		GMA01
D3024		GMA01
D3025	4-202V-13400	MC921
D3026		GMA01
D3027		GMA01
D3030		GMA01
D3031	4-202V-13400	MC921
D3032		GMA01
D3033		GMA01
D3034		GMA01
D3035		GMA01
D3036		DS442
D3037	4-202V-13400	MC921
D3043		GMA01
D3044		GMA01
D3045		GMA01

Schematic Location	Part No.	Description
		(CAPACITORS)
C3001		Elect., 100mfd (M), 16V
C3002		BL Ceramic, 0.1mfd (M), 12V
C3003		BL Ceramic, 0.1mfd (M), 12V
C3004		BL Ceramic, 0.1mfd (M), 12V
C3005		BL Ceramic, 0.1mfd (M), 12V
C3006		Elect., 3.3mfd (M), 50V
C3008		BL Ceramic, 0.01mfd (K), 25V
C3009		Elect., 33mfd (M), 16V
C3010		Elect., 4.7mfd (M), 25V
C3011		Ceramic, 220pF (J), 50V
C3012		Ceramic, 220pF (J), 50V
C3014		BL Ceramic, 0.01mfd (K), 25V
C3017		NP. Elect., 10mfd (M), 25V
C3019		Elect., 1mfd (M), 50V
C3020		M. Polypro, 0.56mfd (J), 50V
C3021		Elect., 1mfd (M), 50V
C3022		Elect., 4.7mfd (M), 25V
C3023		Elect., 1mfd (M), 50V
C3025		Elect., 10mfd (M), 16V
		(RESISTORS)
R3011		470 ohms
R3013		100 ohms
R3014		470 ohms
R3015		240K ohms
R3016		150K ohms
R3017		18K ohms
R3018		680 ohms
R3019		22K ohms
R3020		10K ohms
R3021		100K ohms
R3022		1K ohms
R3023		10K ohms
R3024		100K ohms, 1/4W
R3025		1K ohms
R3026		1K ohms
R3027		1K ohms
R3028		1K ohms
R3029		1K ohms
R3030		1K ohms
R3031		1K ohms
R3032		1K ohms
R3033		1K ohms
R3034		2.2K ohms
R3035		4.7K ohms
R3036		1K ohms
R3037		1K ohms
R3042		22K ohms
R3043		2.2K ohms
R3044		1K ohms
R3045		1M ohms
R3046		22K ohms
R3047		10K ohms
R3048		22K ohms
R3049		Non Flammable, 2.2mfd, 1/4W
R3050		33K ohms
R3051		33K ohms
R3053		22K ohms
R3054		560 ohms
R3055		100K ohms
R3057		2.2K ohms
R3058		Metal Glaze, 5.6 ohms, 1W
R3059		10K ohms
R3060		100K ohms

Schematic Location	Part No.	Description
R3063		Metal Glaze, 820K ohms, ±1%, 1/4W
R3064		1K ohms
R3065		150K ohms
R3066		1K ohms
R3068		1K ohms
R3069		10K ohms
R3071		1K ohms
R3072		1K ohms
R3073		1K ohms
R3074		4.7K ohms
R3075		1K ohms
R3077		1K ohms
R3078		330 ohms
R3080		470 ohms
R3081		1K ohms
R3082		10K ohms
R3083		22K ohms
R3084		330K ohms
R3086		Metal Glaze, 3.3 ohms, 1W
R3087		270K ohms
R3088		12K ohms
R3089		4.7K ohms
R3090		33K ohms
R3091		18K ohms
R3092		1.2K ohms
R3093		1K ohms
R3094		1K ohms
R3095		4.7K ohms
R3096		10K ohms
R3098		68K ohms
R3099		1K ohms
R3101		1K ohms
R3102		2.2K ohms
R3105		100 ohms
R3110		1K ohms
R3111		560 ohms
R3112		560K ohms
R3113		330 ohms
R3114		560 ohms
R3115		4.7K ohms
R3116		4.7K ohms
R3117		15K ohms
R3122		22K ohms
R3123		22K ohms
R3124		4.7K ohms

(4) SY-2 PCB. ELECTRICAL PARTS (143-0-230V-07621)

* All resistors are of carbon type, 1/4 watt, unless otherwise noted.

Schematic Location	Parts No.	Description
CF3301	4-953V-06100	Filter
DIN3301	4-985V-00100	Digital Display
or	4-985V-00110	Digital Display
	143-2-681T-12500	Sleeve
	143-2-374T-03000	Bracket Pilot.
SW3301	4-231V-66650	Push Switch
SW3302	4-231V-66800	Push Switch
SW3304	4-231V-66650	Push Switch
SW3305	4-231V-66650	Push Switch
SW3306	4-231V-66650	Push Switch
SW3307	4-231V-66650	Push Switch
SW3308	4-231V-66650	Push Switch
SW3309	4-231V-66650	Push Switch
SW3311	4-231V-66700	Push Switch
SW3312	4-231V-66700	Push Switch
SW3313	4-231V-66700	Push Switch
SW3314	4-231V-66700	Push Switch
SW3315	4-231V-66700	Push Switch
SW3316	4-231V-66700	Push Switch
SW3317	4-231V-66500	Push Switch
SW3318	4-231V-66650	Push Switch
IC3301		IC, MP1537SL or MP1539SL
		(TRANSISTORS)
Q3302		2SC536 E
Q3303		2SC536 E
Q3304		2SA608 E
Q3305		2SC536 E
Q3306		2SA608 E
Q3307		2SC536 E
Q3308		2SC536 E
Q3309		2SC536 E
		(DIODES)
D3301		DS442
D3302		DS442
D3304		DS442
D3306		DS442
D3307		DS442
D3308		DS442
D3309		Zener GZA7.5Y
D3310		DS442
D3312		LED, PR5704S (Red ... PAUSE/ STILL)
D3313		LED, BG5524C (Green ... F FWD)
D3314		LEG, BG5524C (Green ... PLAY)
D3315		LED, BG5524C (Green ... REW)
D3316		LED, PR5704S (Red ... REC)
D3317		DS442
D3318		LED, AR2432B (Red ... DEW)
D3319		DS442
D3320		DS442
D3321		LED, PR5532B (Red ... POWER)
D3322		DS442
D3323		DS442
D3324		LED, PR5532B (Red ... TIMER)
D3325		DS442
D3326		DS442
		(CAPACITORS)
C3301		Ceramic, 150pF (K), 50V
C3302		Ceramic, 47pF (K), 50V
C3303		BL Ceramic, 0.022mfd (N), 16V
C3304		Elect., 1mfd (M), 50V
C3305		BL Ceramic, 0.022mfd (N), 16V
C3306		Mylar, 0.082mfd (M), 50V
C3307		Ceramic, 0.001mfd (J), 50V
C3308		Elect., 4.7mfd (M), 25V
C3309		BL Ceramic, 0.022mfd (M), 25V
		(RESISTORS)
R3301		560 ohms
R3302		56K ohms
R3303		3.3K ohms
R3304		2.2K ohms
R3305		2.2K ohms

Schematic Location	Part No.	Description
R3306		10K ohms
R3307		1K ohms
R3308		10K ohms
R3309		2.2K ohms
R3310		10K ohms
R3311		33K ohms
R3312		33K ohms
R3315		33K ohms
R3317		1K ohms
R3318		10K ohms
R3319		33K ohms
R3320		10K ohms
R3321		33K ohms
R3322		33K ohms
R3323		33K ohms
R3324		10K ohms
R3327		100K ohms
R3328		33K ohms
R3330	4-956V-10412	R-Pack, 100K ohms x 12
R3331		560 ohms
R3332		560 ohms
R3333		560 ohms
R3334		1K ohms
R3335		1K ohms
R3336		1K ohms
R3337		33K ohms
R3338		100K ohms
R3339		33K ohms
R3341		1K ohms
R3342		2.2K ohms
R3343		33K ohms
R3344		100K ohms
R3350		2.2K ohms
R3351		2.2K ohms

(5) SV-1 PCB. ELECTRICAL PARTS (143-0-230V-22450)

* All resistors are of carbon type, 1/6 watt, unless otherwise noted.

Schematic Location	Parts No.	Description
X4001	4-225V-17700	Crystal, 31.250kHz
		(VARIABLE RESISTORS)
VR4001	4-222V-62610	100K ohms
VR4002	4-222V-62610	100K ohms
VR4003	4-222V-62610	100K ohms
VR4004	4-222V-62610	100K ohms
VR4005	4-222V-65414	100K ohms
VR4006	4-222V-65414	100K ohms
VR4007	4-222V-65414	100K ohms
VR4008	4-222V-65410	20K ohms
VR4009	4-222V-65410	20K ohms
VR4010	4-222V-65412	50K ohms
VR4011	4-222V-62611	200K ohms
		(IC's)
IC4001		BA848B
IC4002		MSM556501RS
IC4003		BA6305
IC4004		BA226
IC4005		HA11713
IC4006		HA11713
IC4007		LC4001B or TC4001BP
IC4008		LC4001B or TC4001BP
IC4009		LC4011B or TC4011BP
IC4010		LC4001B or TC4001BP
		(TRANSISTORS)
Q4001		2SC536F or 2SC2603F or 2SC1815GR
Q4002		2SC536F or 2SC2603F or 2SC1815GR
Q4003		2SC536F or 2SC2603F or 2SC1815GR
Q4004		2SC536F or 2SC2603F or 2SC1815GR
Q4005		2SA933Q or R
Q4006		2SC536F or 2SC2603F or 2SC1815GR
Q4007		2SC536F or 2SC2603F or 2SC1815GR
Q4008		2SA933Q or R
Q4009		2SC536F or 2SC2603F or 2SC1815GR
Q4010		2SC536F or 2SC2603F or 2SC1815GR
Q4011		2SC536F or 2SC2603F or 2SC1815GR
Q4013		2SC536F or 2SC2603F or 2SC1815GR
Q4014		2SC536F or 2SC2603F or 2SC1815GR
Q4015		2SC536F or 2SC2603F or 2SC1815GR
Q4016		2SC536F or 2SC2603F or 2SC1815GR
Q4017		2SC536F or 2SC2603F or 2SC1815GR
Q4018		2SC536F or 2SC2603F or 2SC1815GR
Q4020		2SC536F or 2SC2603F or 2SC1815GR
		(DIODES)
D4001	4-202V-13400	MC921
D4002	4-202V-13400	MC921
D4003		GMA01 or 1SS133
D4004	4-202V-13400	MC921
D4005	4-202V-13400	MC921
D4006	4-202V-13400	MC921
D4007		GMA01 or 1SS133
D4008		GMA01 or 1SS133
D4009		GMA01 or 1SS133
D4010		GMA01 or 1SS133
D4011		GMA01 or 1SS133
D4012		GMA01 or 1SS133
D4013	4-202V-13400	MC921
D4015	4-202V-13400	MC921
D4017	4-202V-13300	MC911
D4018		GMA01 or 1SS133
D4020	4-202V-13400	MC921
D4021		GMA01 or 1SS133
D4022		GMA01 or 1SS133
		(CAPACITORS)
C4001		Elect., 2.2mfd (M), 50V
C4002		Tantalum, 1mfd (K), 35V

Schematic Location	Part No.	Description
C4003		Mylar, 0.018mfd (J), 50V
C4004		Mylar, 0.018mfd (J), 50V
C4005		Mylar, 0.033mfd (J), 50V
C4006		Mylar, 0.047mfd (J), 50V
C4007		Ceramic, 0.0047mfd (K), 50V
C4008		Mylar, 0.047mfd (J), 50V
C4009		Elect., 1mfd (M), 50V
C4010		Ceramic, 0.01mfd (K), 50V
C4011		Ceramic, 0.01mfd (K), 50V
C4012		Elect., 220mfd (M), 10V
C4013		BL Ceramic, 0.1mfd (M), 12V
C4014		Mylar, 0.068mfd (J), 50V
C4015		Mylar, 0.047mfd (K), 50V
C4016		Ceramic, 0.0047mfd (K), 50V
C4017		M.Polypro, 0.39mfd (J), 50V
C4018		Aluminium, 0.33mfd (M), 25V
C4019		BL Ceramic, 0.047mfd (K), 25V
C4020		Mylar, 0.1mfd (K), 50V
C4021		BL Ceramic, 0.022mfd (K), 25V
C4022		Ceramic, 0.0022mfd (K), 50V
C4023		BL Ceramic, 0.1mfd (M), 12V
C4024		Ceramic, 56pF (J), 50V
C4025		Ceramic, 150pF (J), 50V
C4026		Ceramic, 51pF (J), 50V
C4027		Elect., 3.3mfd (M), 35V
C4028		Elect., 4.7mfd (M), 25V
C4029		Elect., 47mfd (M), 16V
C4030		BL Ceramic, 0.1mfd (M), 25V
C4031		Elect., 220mfd (M), 10V
C4032		BL Ceramic, 0.047mfd (K), 25V
C4033		Elect., 2.2mfd (M), 50V
C4034		M.Polypro, 0.1mfd (J), 50V
C4035		Polypropylene, 0.22mfd (J), 100V
or		Polypropylene, 0.22mfd (G), 100V
C4036		Elect., 10mfd (M), 16V
C4037		Elect., 47mfd (M), 16V
C4038		BL Ceramic, 0.1mfd (M), 12V
C4039		Elect., 100mfd (M), 16V
C4040		M.Polypro, 0.047mfd (J), 50V
C4041		BL Ceramic, 0.022mfd (K), 25V
C4042		BL Ceramic, 0.068mfd (K), 25V
C4043		M.Polypro, 0.22mfd (J), 50V
C4044		Polypropylene, 0.039mfd (J), 100V
C4045		Elect., 33mfd (M), 16V
C4046		Elect., 10mfd (M), 16V
C4047		Mylar, 0.022mfd (K), 50V
C4048		Elect., 220mfd (M), 10V
C4049		NP. Elect., 1mfd (M), 25V
C4050		Ceramic, 22pF (J), 50V
C4051		Elect., 47mfd (M), 16V
C4052		Elect., 1mfd (M), 50V
C4053		Mylar, 0.15mfd (J), 50V
C4055		BL Ceramic, 0.068mfd (K), 25V
C4056		BL Ceramic, 0.022mfd (K), 25V
C4057		Ceramic, 0.0015mfd (K), 50V
C4058		Elect., 22mfd (M), 10V
		(RESISTORS)
R4001		33K ohms
R4002		47K ohms
R4003		6.8K ohms
R4004		3.3K ohms
R4005		330 ohms
R4006		33K ohms
R4007		10K ohms
R4008		10K ohms

Schematic Location	Part No.	Description
R4009		1K ohms
R4010		12K ohms
R4011		10K ohms
R4012		560K ohms
R4013		27K ohms
R4014		4.7K ohms
R4015		56K ohms
R4016		10K ohms
R4017		10K ohms
R4018		100K ohms
R4019		33K ohms
R4020		10K ohms
R4021		220K ohms
R4022		10K ohms
R4023		10K ohms
R4024		100 ohms
R4025		10K ohms
R4026		33K ohms
R4027		100K ohms
R4028		10K ohms
R4030		27K ohms
R4031		100K ohms
R4032		22K ohms
R4034		47K ohms
R4036		100K ohms
R4037		100 ohms
R4038		330K ohms
R4039		22K ohms
R4040		1K ohms
R4041		10K ohms
R4042		4.7K ohms
R4043		47K ohms
R4044		56K ohms
R4045		5.6K ohms
R4046		22K ohms
R4047		1K ohms
R4048		56K ohms
R4049		100K ohms
R4050		2.2K ohms
R4051		3.3K ohms
R4052		47K ohms
R4053		33K ohms
R4054		10K ohms
R4055		33K ohms
R4056		10K ohms
R4057		33K ohms
R4058		10K ohms
R4059		1K ohms
R4060		4.7K ohms
R4061		1K ohms
R4062		47K ohms
R4063		150K ohms
R4064		10K ohms
R4065		10K ohms
R4066		8.2K ohms
R4067		2.2K ohms
R4068		3.3K ohms
R4069		68K ohms
R4071		120K ohms
R4073		820 ohms
R4074		39K ohms
R4075		39K ohms
R4076		68K ohms
R4077		47K ohms
R4078		12K ohms
R4079		10K ohms

Schematic Location	Part No.	Description
R4080		Metal Glaze, 82K ohms, ±1%, 1/4W
R4081		100K ohms
R4082		220K ohms
R4083		100K ohms
R4084		220K ohms
R4085		100K ohms
R4086		220K ohms
R4087		5.6K ohms
R4088		1K ohms
R4089		68K ohms
R4090		3.9K ohms
R4091		18K ohms
R4092		100 ohms
R4093		39K ohms
R4094		39K ohms
R4095		1K ohms
R4096		47K ohms
R4097		910 ohms
R4098		1K ohms
R4099		Metal Glaze, 2.7K ohms, ±1%, 1/4W
R4100		47K ohms
R4101		Metal Glaze, 68K ohms, ±1%, 1/4W
R4102		47K ohms
R4103		68K ohms
R4104		47K ohms
R4105		68K ohms
R4106		3.3K ohms
R4107		1.8K ohms
R4108		33K ohms
R4109		33K ohms
R4111		75 ohms
R4112		100K ohms
R4113		10K ohms
R4117		470K ohms
R4118		270K ohms
R4119		10K ohms
R4120		4.7K ohms
R4121		100K ohms
R4122		100K ohms
R4123		10K ohms
R4124		10K ohms
R4125		1M ohms
R4126		100K ohms
R4127		10K ohms
R4128		100K ohms
R4129		10K ohms
R4130		330 ohms
R4131		10K ohms
R4132		330K ohms
R4133		10K ohms
R4134		10K ohms
R4136		1K ohms
R4137		100 ohms
R4138		220K ohms
R4139		68K ohms
R4140		10K ohms
R4142		100 ohms
R4143		1K ohms
R4145		220K ohms
R4146		220K ohms

(6) SV-2 PCB. ELECTRICAL PARTS (CAPSTAN MOTOR)

Schematic Location	Parts No.	Description
IC4301		IC, KM7245P or TA7245P
D4301		Zener Diode, RD5.1EL1 or HZ5.0C2
		(CAPACITORS)
C4301		BL Ceramic, 0.047mfd (M), 16V
C4302		Elect., 22mfd (M), 16V
C4303		Elect., 4.7mfd (M), 16V
C4304		Elect., 4.7mfd (M), 16V
C4305		Elect., 4.7mfd (M), 16V
C4306		BL Ceramic, 0.022mfd (M), 16V
C4308		BL Ceramic, 0.047mfd (M), 16V
C4309		BL Ceramic, 0.047mfd (M), 16V
C4310		BL Ceramic, 0.047mfd (M), 16V
		(RESISTORS)
R4301		Non Flammable, 1.2 ohms
R4302		470K ohms, 1/4W
R4303		1.2K ohms, 1/4W
R4304		1.2K ohms, 1/4W
R4305		5.6K ohms, 1/4W
R4308		5.6K ohms, 1/4W

(7) PW-1 PCB. ELECTRICAL PARTS (143-0-230V-06371)

Schematic Location	Parts No.	Description
D5102		Zener Diode, BZ150
		(COILS)
L5101	4-252V-12500	LF Choke
L5102	4-471V-10200	Core
		(CAPACITORS)
C5101		Elect., 2200mfd (M), 35V
C5103	4-223V-20900	1000mfd, 16V
C5104	4-223V-20900	1000mfd, 16V
C5105		Elect., 47mfd (M), 16V
C5106		Elect., 10mfd (M), 16V
C5107		Elect., 22mfd (M), 16V
C5108		Ceramic, 0.0018mfd (K), 50V

(8) PW-2 PCB. ELECTRICAL PARTS (143-9-0500-11100)

* All reistors are of carbon type, 1/4 watt, unless otherwise noted.

Schematic Location	Parts No.	Description
F5201	⚠4-234V-12503	Fuse, 0.315A
or	⚠4-234V-16207	Fuse, 0.315A
	143-2-383T-03100	Fuse Holder
VR5201	4-222V-62807	Variable Resistor, 1K ohms
		(COILS)
L5201	⚠4-252V-11600	LF Choke
or	⚠4-252V-11800	LF Choke
L5202	4-253V-88622	HF Choke, 56μH
L5203	4-253V-89222	HF Choke, 56μH

Schematic Location	Part No.	Description
		(TRANSISTORS)
Q5201		2SC2274F
Q5202		2SD313D or E or F
Q5203		2SC536D or E or F
	144-2-368T-00600	Heat Sink, Q5202
		(DIODES)
D5201		RO2Z
or	4-202V-13100	DSA17CKD2
D5202		RO2Z
or	4-202V-13100	DSA17CKD2
D5203		RO2Z
or	4-202V-13100	DSA17CKD2
D5204		RO2Z
or	4-202V-13100	DSA17CKD2
D5205		DS135C or D
D5206		DS135C or D
D5207		Zener, BZ300
D5208		Zener, GZA6.2Y or XZ062
D5209		Zener, GZA5.6Y or XZ057
D5210		DS442 or 1S2473
D5211		Zener, GZA5.6Y or XZ057
D5212		Zener, BZ110
D5213		DS135C or D
D5214		DS442 or 1S2473
		(CAPACITORS)
C5201	⚠ 4-223V-24200	M. Polypro, 0.0047mfd, 250V
or	⚠ 4-223V-24300	M. Polypro, 0.0047mfd, 250V
C5202		Elect., 22mfd (M), 100V
C5203		Elect., 100mfd (M), 100V
C5204		Elect., 47mfd (M), 35V
C5205		Elect., 47mfd (M), 35V
C5206		BL Ceramic, 0.01mfd (K), 25V
C5207		Elect., 100mfd (M), 16V
C5208		Ceramic, 0.01mfd (K), 50V
		(RESISTORS)
R5201		Metal Glaze, 1K ohms, 1W
R5202		6.8K ohms
R5203		6.8K ohms
R5204		1K ohms
R5205		5.1K ohms
R5206		510 ohms
R5207		Fusible Metal Giaze, 47 ohms, 1/2W
R5208		Metal Glaze, 470 ohms, 2W
R5209		1K ohms
R5210		1.2K ohms
R5211		150 ohms
R5212		150 ohms
R5213		4.7K ohms

(9) TN-1 PCB. ELECTRICAL PARTS (143-9-0600-07702)

* All resistors are of carbon type, 1/4 watt, unless otherwise noted.

Schematic Location	Part No.	Description
VR6001	4-222V-65805	Variable Resistor
T6001	4-256V-27400	IF. Trans.
T6002	4-256V-24800	IF. Trans.
D6001		DIODE 1S1555 or 1S2473 or 1S2076 or DS442
		(FILTERS)
F6001	4-953V-04200	
F6002	4-953V-00100	
F6003	4-953V-00300	
F6004	4-953V-04100	
		(COILS)
L6001	4-253V-94700	HF Choke, 0.68μH
L6002	4-253V-98700	HF Choke
L6003	4-253V-95100	HF Choke, 1.3μH
L6004	4-253V-85914	HF Choke, 12μH
L6005	4-253V-85915	HF Choke, 15μH
L6006	4-253V-85915	HF Choke, 15μH
L6007	4-253V-85912	HF Choke
		(IC's)
IC6001		IC, TA7607AP
IC6002		IC, LA1365
		(TRANSISTORS)
Q6001		2SC2216
Q6002		2SC536E or F or G or 2SC1815G or O or Y
Q6003		2SC536E or F or G or 2SC1815G or O or Y
Q6004		2SC536E or F or G or 2SC1815G or O or Y
		(CAPACITORS)
C6001		Ceramic, 0.01mfd (P), 50V
or		Ceramic, 0.01mfd (Z), 50V
C6002		Ceramic, 0.01mfd (P), 50V
or		Ceramic, 0.01mfd (Z), 50V
C6003		Ceramic, 0.01mfd (P), 50V
or		Ceramic, 0.01mfd (Z), 50V
C6004		Ceramic, 0.01mfd (P), 50V
or		Ceramic, 0.01mfd (Z), 50V
C6005		Ceramic, 0.001mfd (K), 50V
C6008		Elect., 47mfd (M), 25V
C6009		Elect., 0.47mfd (M), 50V
C6010		Elect., 1mfd (M), 50V
C6011		Elect., 1mfd (M), 50V
C6012		Ceramic, 0.01mfd (P), 50V
or		Ceramic, 0.01mfd (Z), 50V
C6013		Ceramic, 0.001mfd (K), 50V
C6014		Ceramic, 0.01mfd (P), 50V
or		Ceramic, 0.01mfd (Z), 50V
C6015		Ceramic, 15pF (J), 50V, CH
C6016		Ceramic, 2pF (D), 50V
C6017		Ceramic, 2pF (D), 50V
C6018		Ceramic, 82pF (J), 50V, CH
C6019		Elect., 2.2mfd (M), 50V
C6020		Ceramic, 20pF (J), 50V
C6021		Elect., 470mfd (M), 16V
C6022		Ceramic, 0.01mfd (P), 50V
or		Ceramic, 0.01mfd (Z), 50V
C6023		Elect., 4.7mfd (M), 25V
C6024		Elect., 4.7mfd (M), 25V
C6025		Elect., 1mfd (M), 50V
C6026		Elect., 0.47mfd (M), 50V
C6027		Elect., 4.7mfd (M), 25V

Schematic Location	Parts No.	Description
R6024		1K ohms, 1/6W
R6025		3.3K ohms
R6026		2.2K ohms, 1/6W
R6027		1K ohms
R6028		1.5K ohms
R6029		12K ohms
R6030		620 ohms, 1/6W
R6031		47 ohms
R6032		2.2K ohms, 1/6W

(10) TN-2 PCB. ELECTRICAL PARTS (143-0-230V-24200)

* All resistors are of carbon type, 1/4 watt, unless otherwise noted.

Schematic Location	Parts No.	Description
	143-2-374T-04200	Bracket, LED's
VR6201	4-222V-19100	Variable Resistor
or	4-222V-19200	Variable Resistor
SW6201	4-231V-67600	Channel Select Switch
SW6202	4-231V-16800	AFT Switch
		(IC's & TRANSISTORS)
IC6201		IC, μPC574J
Q6201		2SA562 O or Y or 2SA984E or F
Q6202		2SA562 O or Y or 2SA984E or F
Q6203		2SA562O or Y or 2SA984E or F
Q6205		2SC536KE
		(DIODES)
D6201		LED, PR5704S ... (RED: CH Light)
D6202		LED, PR5704S ... (RED: CH Light)
D6203		LED, PR5704S ... (RED: CH Light)
D6204		LED, PR5704S ... (RED: CH Light)
D6205		LED, PR5704S ... (RED: CH Light)
D6206		LED, PR5704S ... (RED: CH Light)
D6207		LED, PR5704S ... (RED: CH Light)
D6208		LED, PR5704S ... (RED: CH Light)
D6209		DS442X or 1S2473 or 1S1555 or 1SS133
D6210		DS442X or 1S2473 or 1S1555 or 1SS133
D6211		DS442X or 1S2473 or 1S1555 or 1SS133
D6212		DS442X or 1S2473 or 1S1555 or 1SS133
D6214		DS442X or 1S2473 or 1S1555 or 1SS133
D6215		DS442X or 1S2473 or 1S1555 or 1SS133
		(CAPACITORS)
C6201		Elect., 100mfd (M), 16V
C6203		Elect., 1mfd (M), 50V
C6204		Ceramic, 0.01mfd (Z), 50V
C6205		Elect., 22mfd (M), 50V
C6206		Mylar, 0.1mfd (K), 50V

Schematic Location	Parts No.	Description
		(RESISTORS)
R6201		10K ohms
R6202		15K ohms
R6203		10K ohms
R6204		15K ohms
R6205		10K ohms
R6206		15K ohms
R6207		1M ohms
R6208		1M ohms
R6209		470K ohms
R6210		39K ohms
R6211		1K ohms
R6212		15K ohms
R6213		820 ohms
R6214		820 ohms
R6215		820 ohms

(11) MC-1 PCB. ELECTRICAL PARTS (143-9-1300-01100)

Schematic Location	Parts No.	Description
	4-202V-13200	Photo Sensor, Reel Base Revolution Detector
R3801		Cabon Resistor, 680 ohm ±5% 1/4W

(12) SV-1 PCB. ELECTRICAL PARTS (143-0-230V-34000)

* All resistors are of carbon type, 1/6 watt, unless otherwise noted.

X4001	4-225V-17700	Crystal, 31.250kHz
		(VARIABLE RESISTORS)
VR4001	4-222V-62610	100K ohms
VR4002	4-222V-62619	100K ohms
VR4003	4-222V-62610	100K ohms
VR4004	4-222V-62610	100K ohms
VR4005	4-222V-65414	100K ohms
VR4006	4-222V-65414	100K ohms
VR4007	4-222V-65414	100K ohms
VR4008	4-222V-65410	20K ohms
VR4009	4-222V-65410	20K ohms
VR4010	4-222V-65412	50K ohms
VR4011	4-222V-62611	200K ohms
VR4012	4-222V-65418	500K ohms
		(IC's)
IC4001		BA848B
IC4002		MSM556501RS
IC4003		BA6305
IC4004		BA226
IC4005		HA11713
IC4006		HA11713
IC4007		LC4001B or TC4001BP
IC4008		LC4001B or TC4001BP
IC4009		LC4011B or TC4011BP
IC4010		LC4001B or TC4001BP

Schematic Location	Part No.	Description
		(TRANSISTORS)
Q4001		2SC536F or 2SC2603F or 2SC1815GR
Q4002		2SC536F or 2SC2603F or 2SC1815GR
Q4003		2SC536F or 2SC2603F or 2SC1815GR
Q4004		2SC536F or 2SC2603F or 2SC1815GR
Q4005		2SA933Q or R
Q4006		2SC536F or 2SC2603F or 2SC1815GR
Q4007		2SC536F or 2SC2603F or 2SC1815GR
Q4008		2SA933Q or R
Q4009		2SC536F or 2SC2603F or 2SC1815GR
Q4010		2SC536F or 2SC2603F or 2SC1815GR
Q4011		2SC536F or 2SC2603F or 2SC1815GR
Q4013		2SC536F or 2SC2603F or 2SC1815GR
Q4014		2SC536F or 2SC2603F or 2SC1815GR
Q4015		2SC536F or 2SC2603F or 2SC1815GR
Q4016		2SC536F or 2SC2603F or 2SC1815GR
Q4017		2SC536F or 2SC2603F or 2SC1815GR
Q4018		2SC536F or 2SC2603F or 2SC1815GR
Q4020		2SC536F or 2SC2603F or 2SC1815GR
Q4021		2SC536F or 2SC2603F or 2SC1815GR
Q4022		2SC536F or 2SC2603F or 2SC1815GR
Q4023		2SC536F or 2SC2603F or 2SC1815GR
Q4024		2SC536F or 2SC2603F or 2SC1815GR
Q4025		2SC3399 or 2SC144F
		(DIODES)
D4001	4-202V-13400	MC921
D4002	4-202V-13400	MC921
D4003		GMA01 or 1SS133
D4004	4-202V-13400	MC921
D4005	4-202V-13400	MC921
D4006	4-202V-13400	MC921
D4007		GMA01 or 1SS133
D4008		GMA01 or 1SS133
D4009		GMA01 or 1SS133
D4010		GMA01 or 1SS133
D4011		GMA01 or 1SS133
D4012		GMA01 or 1SS133
D4013	4-202V-13400	MC921
D4015		GMA01 or 1SS133
D4017	4-202V-13300	MC911
D4018		GMA01 or 1SS133
D4020	4-202V-13400	MC921
D4021		GMA01 or 1SS133
D4022		DS442 or 1S2473 or 1S1555
D4024		GMA01 or 1SS133
D4025		GMA01 or 1SS133
D4026		GMA01 or 1SS133
D4027		GMA01 or 1SS133
D4028		GMA01 or 1SS133
D4029	4-202V-13300	MC911
D4030		GMA01 or 1SS133
D4031		GMA01 or 1SS133
D4032		GMA01 or 1SS133
		(CAPACITORS)
C4001		Elect., 2.2mfd (M), 50V
C4002		Tantalum, 1mfd (K), 35V
C4003		Mylar, 0.018mfd (J), 50V
C4004		Mylar, 0.018mfd (J), 50V
C4005		Mylar, 0.033mfd (J), 50V
C4006		Mylar, 0.047mfd (J), 50V
C4007		Ceramic, 0.0047mfd (K), 50V
C4008		Mylar, 0.047mfd (J), 50V
C4009		Elect., 1mfd (M), 50V
C4010		Ceramic, 0.01mfd (K), 50V
C4011		Ceramic, 0.01mfd (K), 50V
C4012		Elect., 220mfd (M), 10V
C4013		BL Ceramic, 0.1mfd (M), 12V
C4014		Mylar, 0.068mfd (J), 50V
C4015		Mylar, 0.047mfd (K), 50V
C4016		Ceramic, 0.0047mfd (K), 50V
C4017		M. Polypro. 0.39mfd (J), 50V
C4018		Aluminium, 0.33mfd (M), 25V
C4019		BL Ceramic, 0.047mfd (K), 25V
C4020		Mylar, 0.1mfd (K), 50V
C4021		BL Ceramic, 0.022mfd (K), 25V
C4022		Ceramic, 0.0022mfd (K), 50V
C4023		BL Ceramic, 0.1mfd (M), 12V
C4024		Ceramic, 56pF (J), 50V
C4025		Ceramic, 150pF (J), 50V
C4026		Ceramic, 51pF (J), 50V
C4027		Elect., 3.3mfd (M), 35V
C4028		Elect., 4.7mfd (M), 25V
C4029		Elect., 47mfd (M), 16V
C4030		BL Ceramic, 0.1mfd (M), 25V
C4031		Elect., 220mfd (M), 10V
C4032		BL Ceramic, 0.047mfd (K), 25V
C4033		Elect., 2.2mfd (M), 50V
C4034		M. Polypro, 0.1mfd (J), 50V
C4035		Polypropylene, 0.22mfd (J), 100V
or		Polypropylene, 0.22mfd (G), 100V
C4036		Elect., 10mfd (M), 16V
C4037		Elect., 47mfd (M), 16V
C4038		BL Ceramic, 0.1mfd (M), 12V
C4039		Elect., 100mfd (M), 16V
C4040		M. Polypro, 0.047mfd (J), 50V
C4041		BL Ceramic, 0.022mfd (K), 25V
C4042		BL Ceramic, 0.068mfd (K), 25V
C4043		M. Polypro, 0.22mfd (J), 50V
C4044		Polypropylene, 0.039mfd (J), 100V
C4045		Elect., 33mfd (M), 16V
C4046		Elect., 10mfd (M), 16V
C4047		Mylar, 0.022mfd (K), 50V
C4048		Elect., 220mfd (M), 10V
C4049		NP. Elect., 1mfd (M), 25V
C4050		Ceramic, 22pF (J), 50V
C4051		Elect., 47mfd (M), 16V
C4052		Mylar, 0.068mfd (K), 50V
C4053		Mylar, 0.15mfd (J), 50V

Schematic Location	Part No.	Description
C4055		BL Ceramic, 0.068mfd (K), 25V
C4056		BL Ceramic, 0.022mfd (K), 25V
C4057		Ceramic, 0.0015mfd (K), 50V
C4058		Elect., 22mfd (M), 10V
C4059		Elect., 1mfd (M), 50V
C4060		BL Ceramic, 0.001mfd (M), 50V
C4061		BL Ceramic, 0.001mfd (M), 50V
C4062		Polypropylene, 0.068mfd (G), 100V
or		Polypropylene, 0.068mfd (J), 100V
C4064		Ceramic, 150pF (J), 50V
		(RESISTORS)
R4001		33K ohms
R4002		47K ohms
R4003		6.8K ohms
R4004		3.3K ohms
R4005		330 ohms
R4006		33K ohms
R4007		10K ohms
R4008		10K ohms
R4009		1K ohms
R4010		12K ohms
R4011		10K ohms
R4012		560K ohms
R4013		27K ohms
R4014		4.7K ohms
R4016		4.7K ohms
R4017		4.7K ohms
R4018		100K ohms
R4019		33K ohms
R4020		10K ohms
R4021		220K ohms
R4022		10K ohms
R4023		10K ohms
R4024		100 ohms
R4025		10K ohms
R4026		33K ohms
R4027		100K ohms
R4028		10K ohms
R4030		27K ohms
R4031		100K ohms
R4032		22K ohms
R4034		47K ohms
R4036		100K ohms
R4037		100 ohms
R4038		330K ohms
R4039		22K ohms
R4040		1K ohms
R4041		10K ohms
R4042		4.7K ohms
R4043		47K ohms
R4044		56K ohms
R4045		5.6K ohms
R4046		22K ohms
R4047		1K ohms
R4048		56K ohms
R4049		100K ohms
R4050		2.2K ohms
R4051		3.3K ohms
R4052		47K ohms
R4053		33K ohms
R4054		10K ohms
R4055		33K ohms
R4056		10K ohms
R4057		33K ohms

Schematic Location	Part No.	Description
R4058		10K ohms
R4059		1K ohms
R4060		4.7K ohms
R4061		1K ohms
R4062		47K ohms
R4063		150K ohms
R4064		10K ohms
R4065		10K ohms
R4066		8.2K ohms
R4067		2.2K ohms
R4068		3.3K ohms
R4069		68K ohms
R4071		120K ohms
R4073		820 ohms
R4074		39K ohms
R4075		39K ohms
R4076		68K ohms
R4077		47K ohms
R4078		12K ohms
R4079		10K ohms
R4080		Metal Glaze, 82K ohms, ±1%, 1/4W
R4081		100K ohms
R4082		220K ohms
R4083		100K ohms
R4084		220K ohms
R4085		100K ohms
R4086		220k ohms
R4087		5.6K ohms
R4088		1K ohms
R4089		68K ohms
R4090		3.9K ohms
R4091		18K ohms
R4092		100 ohms
R4093		39K ohms
R4094		39K ohms
R4095		1K ohms
R4096		47K ohms
R4097		910 ohms
R4098		1K ohms
R4099		Metal Glaze, 2.7K ohms, ±1%, 1/4W
R4100		47K ohms
R4101		Metal Glaze, 68K ohms, ±1%, 1/4W
R4102		47K ohms
R4103		68K ohms
R4104		47K ohms
R4105		68K ohms
R4106		3.3K ohms
R4107		1.8K ohms
R4108		33K ohms
R4109		33K ohms
R4111		75 ohms
R4112		100K ohms
R4113		10K ohms
R4117		270K ohms
R4118		270K ohms
R4119		10K ohms
R4120		4.7K ohms
R4121		100K ohms
R4122		100K ohms
R4123		10K ohms
R4124		10K ohms
R4125		1M ohms
R4126		100K ohms
R4127		10K ohms

Schematic Location	Part No.	Description
R4128		100K ohms
R4129		10K ohms
R4130		330 ohms
R4131		10K ohms
R4132		330K ohms
R4133		10K ohms
R4134		10K ohms
R4136		1K ohms
R4137		100 ohms
R4138		220K ohms
R4139		68K ohms
R4140		10K ohms
R4142		100 ohms
R4143		1K ohms
R4145		220K ohms
R4146		220K ohms
R4147		10K ohms
R4148		33K ohms
R4149		100K ohms
R4150		10K ohms
R4151		100K ohms
R4152		47K ohms
R4153		22K ohms
R4154		220K ohms
R4155		560K ohms
R4156		33K ohms
R4157		22K ohms
R4158		270K ohms
R4159		33K ohms
R4160		2.2K ohms
R4161		47K ohms

Schematic Location	Part No.	Description

MEMO

CIRCUIT DIAGRAMS & PRINTED CIRCUIT BOARDS

VTC5150 (U.K., H.K.)
VTC5150 (CONTINENT)
VTC5150 (South Africa)
VTC5150 (New Zealand)

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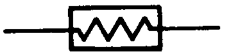
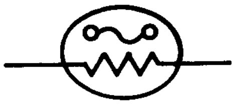


Non Flammable Resistor



Fusible Resistor

NOTES:

1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted. p=pico farad
3. All inductance values in "mH" unless otherwise noted. μ=micro henry
4. Marks indicated in each connector indicate the following color of wire.

B : Black
R : Red
W : White
P : Pink

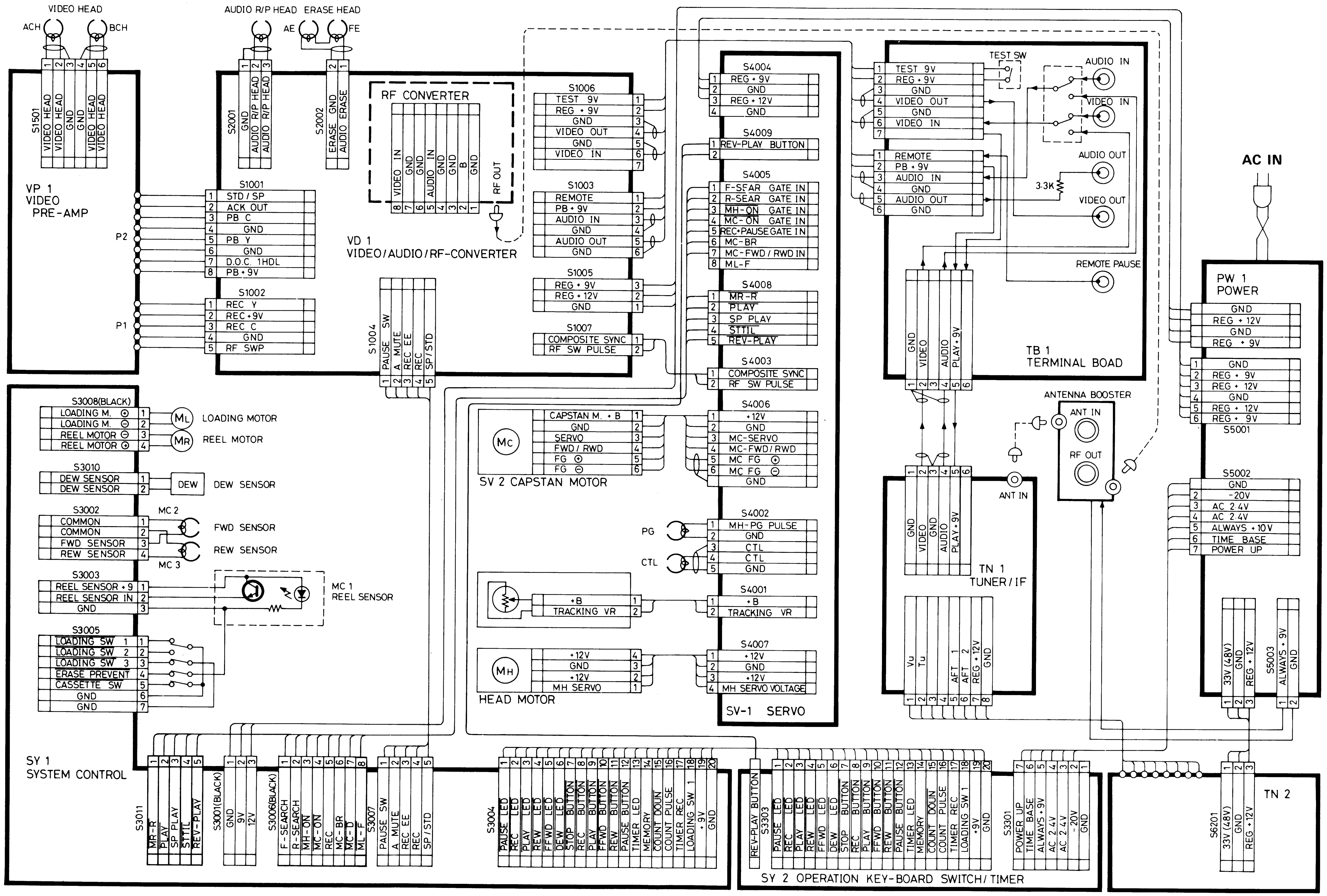
V : Violet
Y : Yellow
G : Gray
LB : Light Blue

BR : Brown
GR : Green
BL : Blue
OR : Orange

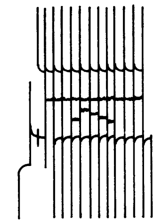
PRODUCT SAFETY NOTICE

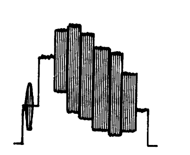
THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

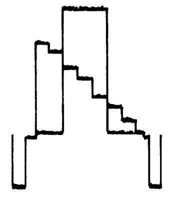
OVERALL WIRING DIAGRAM

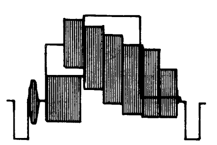

VIDEO HEAD
ACH
BCH
AUDIO R/P HEAD
ERASE HEAD
AE
FE
S1501
VIDEO HEAD
VIDEO HEAD
GND
GND
VIDEO HEAD
VIDEO HEAD
VP 1 VIDEO PRE-AMP
P2
P1
S2001
GND
AUDIO R/P HEAD
AUDIO R/P HEAD
S2002
ERASE GND
AUDIO ERASE
RF CONVERTER
VIDEO IN
GND
GND
AUDIO IN
GND
GND
B
GND
RF OUT
S1001
STD / SP
ACK OUT
PB C
GND
PB Y
GND
D.O.C. 1HDL
PB • 9V
S1002
REC Y
REC • 9V
REC C
GND
RF SWP
VD 1 VIDEO/AUDIO/RF-CONVERTER
S1004
PAUSE SW
A MUTE
REC EE
REC
SP/STD
S1006
TEST 9V
REG • 9V
GND
VIDEO OUT
GND
VIDEO IN
S1003
REMOTE
PB • 9V
AUDIO IN
GND
AUDIO OUT
GND
S1005
REG • 9V
REG • 12V
GND
S1007
COMPOSITE SYNC
RF SW PULSE
S4004
REG • 9V
GND
REG • 12V
GND
S4009
REV-PLAY BUTTON
S4005
F-SEAR GATE IN
R-SEAR GATE IN
MH-ON GATE IN
MC-ON GATE IN
REC•PAUSE GATE IN
MC-BR
MC-FWD / RWD IN
ML-F
S4008
MR-R
PLAY
SP PLAY
STTIL
REV-PLAY
S4003
COMPOSITE SYNC
RF SW PULSE
S4006
+12V
GND
MC-SERVO
MC-FWD/RWD
MC FG ⊕
MC FG ⊖
GND
S4002
MH-PG PULSE
GND
CTL
CTL
GND
PG
CTL
S4001
+B
TRACKING VR
S4007
+12V
GND
+12V
MH SERVO VOLTAGE
SV-1 SERVO
MC
CAPSTAN M. +B
GND
SERVO
FWD / RWD
FG ⊕
FG ⊖
SV 2 CAPSTAN MOTOR
+B
TRACKING VR
MH
+12V
GND
+12V
MH SERVO
HEAD MOTOR
TEST SW
AUDIO IN
VIDEO IN
AUDIO OUT
VIDEO OUT
REMOTE PAUSE
3.3K
TEST 9V
REG • 9V
GND
VIDEO OUT
GND
VIDEO IN
REMOTE
PB • 9V
AUDIO IN
GND
AUDIO OUT
GND
GND
VIDEO
AUDIO
PLAY • 9V
TB 1 TERMINAL BOAD
AC IN
PW 1 POWER
GND
REG • 12V
GND
REG • 9V
GND
REG • 9V
REG • 12V
GND
REG • 12V
REG • 9V
S5001
S5002
GND
- 20V
AC 2.4V
AC 2.4V
ALWAYS • 10V
TIME BASE
POWER UP
33V (48V)
GND
REG • 12V
S5003
ALWAYS • 9V
GND
ANTENNA BOOSTER
ANT IN
RF OUT
ANT IN
GND
VIDEO
GND
AUDIO
PLAY • 9V
TN 1 TUNER/IF
Vu
Tu
AFT 1
AFT 2
REG • 12V
GND
S3008(BLACK)
LOADING M. ⊕
LOADING M. ⊖
REEL MOTOR ⊖
REEL MOTOR ⊕
ML
LOADING MOTOR
MR
REEL MOTOR
S3010
DEW SENSOR
DEW SENSOR
DEW
DEW SENSOR
S3002
COMMON
COMMON
FWD SENSOR
REW SENSOR
MC 2
MC 3
FWD SENSOR
REW SENSOR
S3003
REEL SENSOR • 9
REEL SENSOR IN
GND
MC 1
REEL SENSOR
S3005
LOADING SW 1
LOADING SW 2
LOADING SW 3
ERASE PREVENT
CASSETTE SW
GND
GND
SY 1 SYSTEM CONTROL
S3011
MR-R
PLAY
SP PLAY
STTIL
REV-PLAY
S3001(BLACK)
GND
9V
12V
S3006(BLACK)
F-SEARCH
R-SEARCH
MH-ON
MC-ON
REC
MC-BR
MC-D
ML-F
S3007
PAUSE SW
A MUTE
REC EE
REC
SP/STD
S3004
PAUSE LED
REC LED
PLAY LED
REW LED
FFWD LED
DEW LED
STOP BUTTON
REC BUTTON
PLAY BUTTON
FFWD BUTTON
REW BUTTON
PAUSE BUTTON
TIMER LED
MEMORY
COUNT DOUN
COUNT PULSE
TIMER REC
LOADING SW 1
• 9V
GND
REV-PLAY BUTTON
S3303
PAUSE LED
REC LED
PLAY LED
REW LED
FFWD LED
DEW LED
STOP BUTTON
REC BUTTON
PLAY BUTTON
FFWD BUTTON
REW BUTTON
PAUSE BUTTON
TIMER LED
MEMORY
COUNT DOUN
COUNT PULSE
TIMER REC
LOADING SW 1
• 9V
GND
S3301
POWER UP
TIME BASE
ALWAYS • 9V
AC 2.4V
AC 2.4V
- 20V
GND
SY 2 OPERATION KEY-BOARD SWITCH/TIMER
TN 2
S6201
33V (48V)
GND
REG • 12V

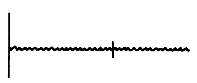
WAVEFORM OF VIDEO CIRCUIT

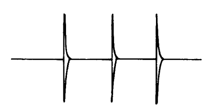

IC1001 (7PIN)

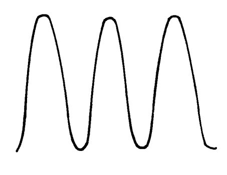

S1006 (4 PIN) LINE OUT

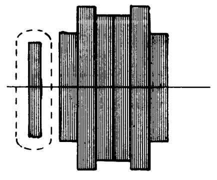

IC1001 (23PIN)

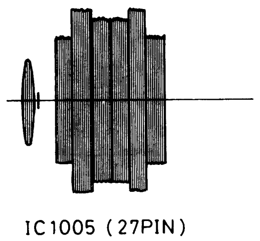

S1006(6PIN) VIDEO IN

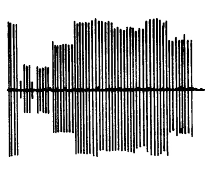

IC1003 (5PIN)

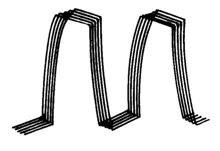

TP1011 (IC1006 23PIN)

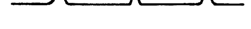

IC1005 (24PIN)


TP1016

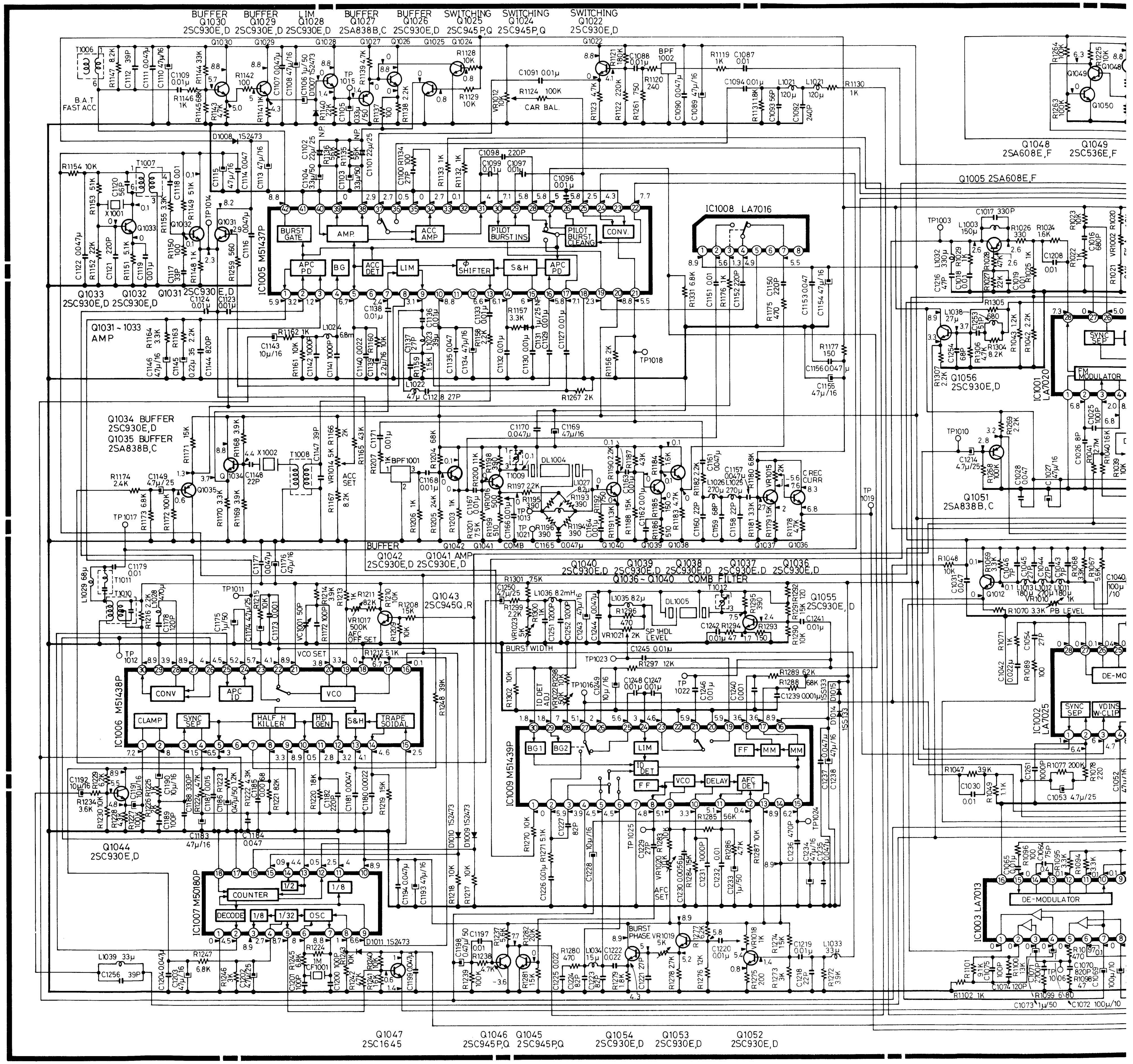

IC1005 (27PIN)


TP1019

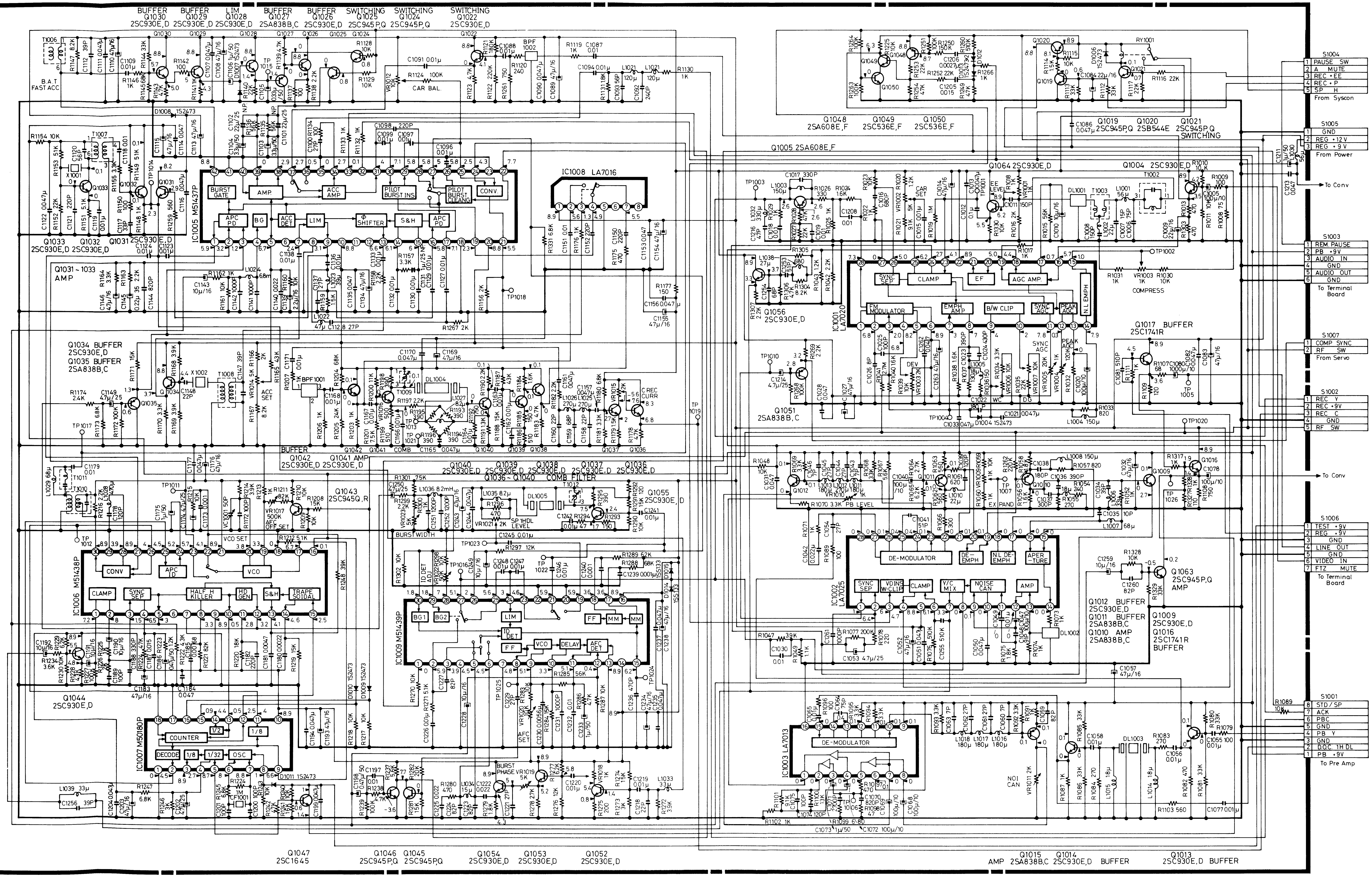

J1003


TP1024

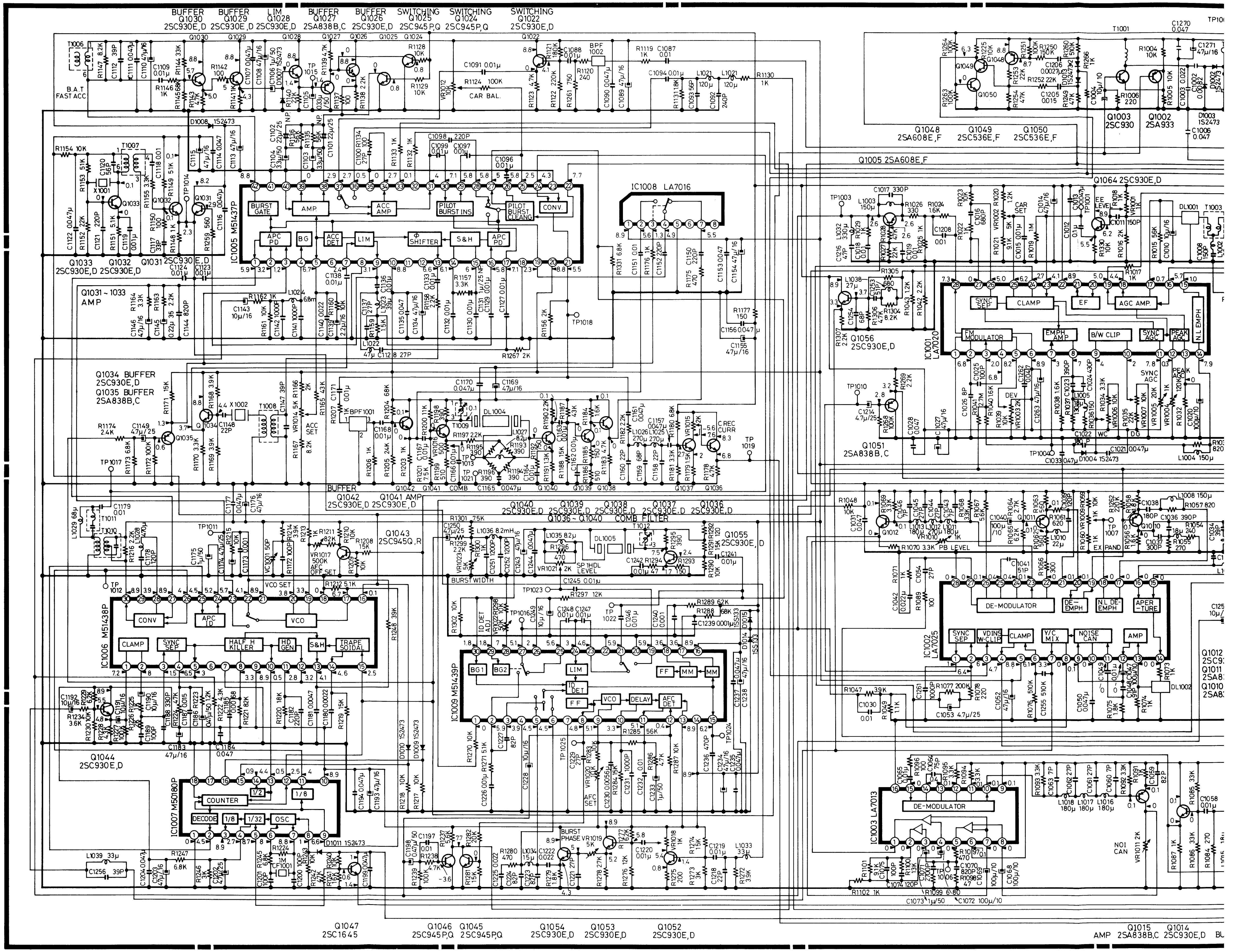
P.C.B. VD-1 VIDEO CIRCUIT


BUFFER Q1030 2SC930E,D
BUFFER Q1029 2SC930E,D
LIM Q1028 2SC930E,D
BUFFER Q1027 2SA838B,C
BUFFER Q1026 2SC930E,D
SWITCHING Q1025 2SC945P,Q
SWITCHING Q1024 2SC945P,Q
SWITCHING Q1022 2SC930E,D
B.A.T FAST ACC
CAR BAL.
BPF 1002
Q1048 2SA608E,F
Q1049 2SC536E,F
Q1005 2SA608E,F
IC1005 M51437P
BURST GATE
AMP
ACC AMP
PILOT BURST INS
PILOT BURST CLEANG
CONV
APC PD
BG
ACC DET
LIM
Φ SHIFTER
S&H
APC PD
IC1008 LA7016
Q1033 2SC930E,D
Q1032 2SC930E,D
Q1031 2SC930E,D
Q1031 ~ 1033 AMP
TP1018
Q1034 BUFFER 2SC930E,D
Q1035 BUFFER 2SA838B,C
TP1017
ACC SET
BPF1001
DL1004
C REC CURR
TP 1019
BUFFER
Q1042 2SC930E,D
Q1041 AMP 2SC930E,D
COMB
Q1040 2SC930E,D
Q1039 2SC930E,D
Q1038 2SC930E,D
Q1037 2SC930E,D
Q1036 2SC930E,D
Q1036 ~ Q1040 COMB FILTER
DL1005
Q1055 2SC930E,D
Q1043 2SC945Q,R
TP1011
VCO SET
APC OFF SET
BURST WIDTH
SP1HDL LEVEL
TP1023
TP 1012
IC1006 M51438P
CONV
APC ID
VCO
CLAMP
SYNC SEP
HALF H KILLER
HD GEN
S&H
TRAPE SOIDAL
ID DET ADJ
TP1016
TP 1022
IC1009 M51439P
BG1
BG2
LIM
ID DET
FF
MM
MM
F F
VCO
DELAY
AFC DET
TP 1024
TP 1025
AFC SET
Q1044 2SC930E,D
IC1007 M50160P
COUNTER
1/2
1/8
DECODE
1/8
1/32
OSC
BURST PHASE
TP1003
Q1056 2SC930E,D
IC1001 LA7020
SYNC SEP
FM MODULATOR
TP1010
Q1051 2SA838B,C
Q1012
PB LEVEL
IC1002 LA7025
DE-MO
SYNC SEP
VD INS W.CLIP
IC1003 LA7013
DE-MODULATOR
Q1047 2SC1645
Q1046 2SC945P,Q
Q1045 2SC945P,Q
Q1054 2SC930E,D
Q1053 2SC930E,D
Q1052 2SC930E,D

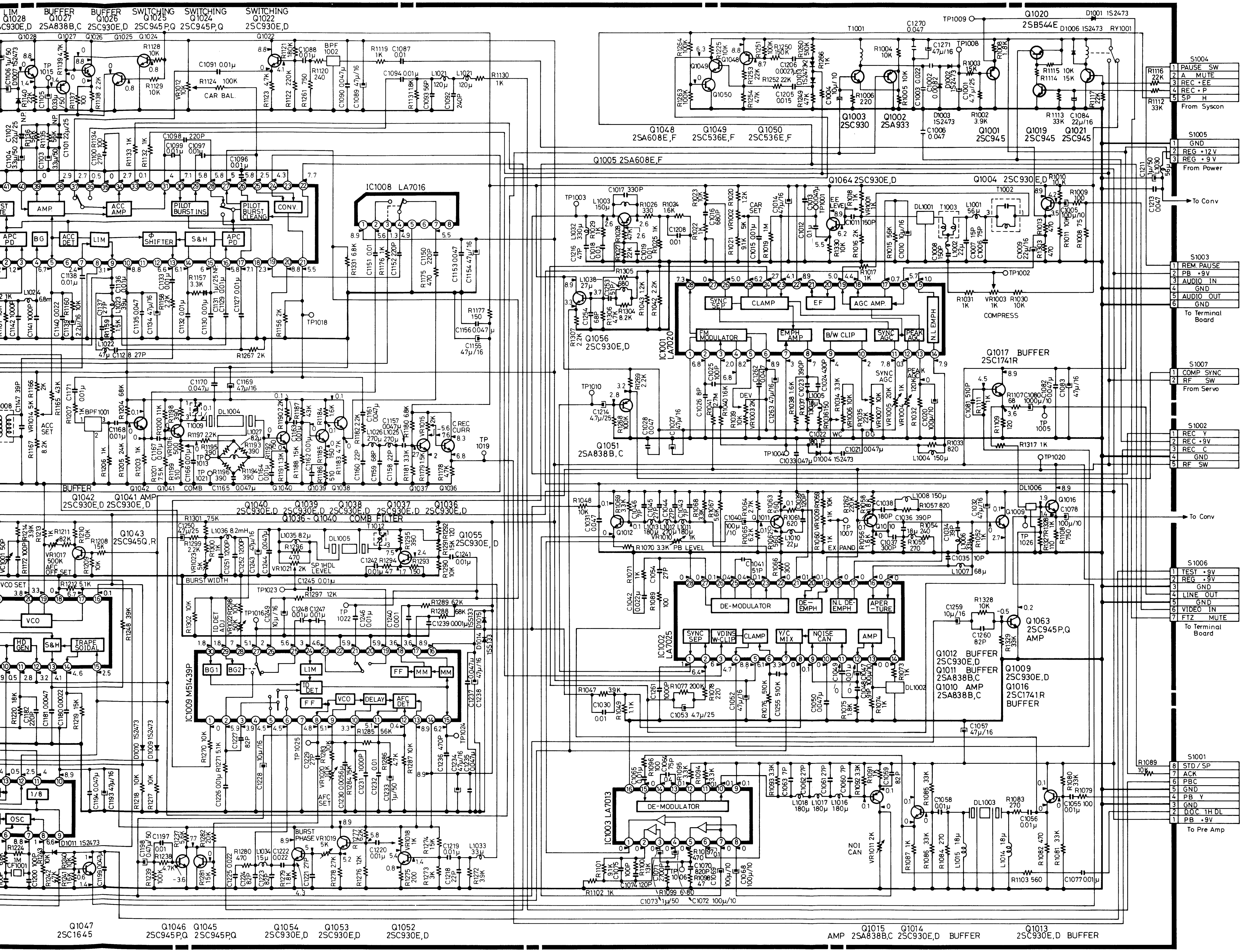
P.C.B. VD-1 VIDEO CIRCUIT


BUFFER Q1030 2SC930E,D
BUFFER Q1029 2SC930E,D
LIM Q1028 2SC930E,D
BUFFER Q1027 2SA838B,C
BUFFER Q1026 2SC930E,D
SWITCHING Q1025 2SC945P,Q
SWITCHING Q1024 2SC945P,Q
SWITCHING Q1022 2SC930E,D
B.A.T FAST ACC
CAR BAL.
BPF 1002
IC1005 M51437P
BURST GATE
AMP.
ACC AMP
PILOT BURST INS
PILOT BURST CLEANG
CONV
APC PD
BG
ACC DET
LIM
SHIFTER
S&H
APC PD
IC1008 LA7016
Q1033 2SC930E,D
Q1032 2SC930E,D
Q1031 2SC930E,D
Q1031~1033 AMP
Q1034 BUFFER 2SC930E,D
Q1035 BUFFER 2SA838B,C
X1001
X1002
T1006
T1007
T1008
BPF1001
ACC SET
DL1004
C REC CURR
BUFFER
Q1042 2SC930E,D
Q1041 AMP 2SC930E,D
Q1040 2SC930E,D
Q1039 2SC930E,D
Q1038 2SC930E,D
Q1037 2SC930E,D
Q1036 2SC930E,D
Q1036~Q1040 COMB FILTER
COMB
Q1043 2SC945Q,R
Q1055 2SC930E,D
VCO SET
AFC OFF SET
IC1006 M51438P
CONV
APC ID
VCO
CLAMP
SYNC SEP
HALF H KILLER
HD GEN
S&H
TRAPE SOIDAL
DL1005
BURST WIDTH
SP 1HDL LEVEL
ID DET ADJ
IC1009 M51439P
BG1
BG2
LIM
ID DET
VCO
DELAY
AFC DET
FF
MM
Q1044 2SC930E,D
IC1007 M50180P
COUNTER
1/2
1/8
DECODE
1/8
1/32
OSC
BURST PHASE
AFC SET
Q1047 2SC1645
Q1046 2SC945P,Q
Q1045 2SC945P,Q
Q1054 2SC930E,D
Q1053 2SC930E,D
Q1052 2SC930E,D
Q1048 2SA608E,F
Q1049 2SC536E,F
Q1050 2SC536E,F
Q1019 2SC945P,Q
Q1020 2SB544E
Q1021 2SC945P,Q SWITCHING
RY1001
Q1005 2SA608E,F
Q1064 2SC930E,D
Q1004 2SC930E,D
CAR SET
EE LEVEL
DL1001
T1002
T1003
IC1001 LA7020
SYNC SEP
CLAMP
EF
AGC AMP
FM MODULATOR
EMPH AMP
B/W CLIP
SYNC AGC
PEAK AGC
N.L EMPH
DEV
SYNC AGC
PEAK AGC
COMPRESS
Q1056 2SC930E,D
Q1051 2SA838B,C
Q1017 BUFFER 2SC1741R
D1004 1S2473
PB LEVEL
EX PAND
IC1002 LA7025
DE-MODULATOR
DE-EMPH
N.L DE-EMPH
APER-TURE
SYNC SEP
VD INS W-CLIP
CLAMP
Y/C MIX
NOISE CAN
AMP
DL1002
Q1063 2SC945P,Q AMP
Q1012 BUFFER 2SC930E,D
Q1011 BUFFER 2SA838B,C
Q1010 AMP 2SA838B,C
Q1009 2SC930E,D
Q1016 2SC1741R BUFFER
IC1003 LA7013
DE-MODULATOR
NOI CAN
DL1003
AMP Q1015 2SA838B,C
Q1014 2SC930E,D BUFFER
Q1013 2SC930E,D BUFFER
S1004
1 PAUSE SW
2 A MUTE
3 REC•EE
4 REC•P
5 SP H
From Syscon
S1005
1 GND
2 REG +12V
3 REG +9V
From Power
To Conv
S1003
1 REM PAUSE
2 PB +9V
3 AUDIO IN
4 GND
5 AUDIO OUT
6 GND
To Terminal Board
S1007
1 COMP SYNC
2 RF SW
From Servo
S1002
1 REC Y
2 REC +9V
3 REC C
4 GND
5 RF SW
To Conv
S1006
1 TEST +9V
2 REG +9V
3 GND
4 LINE OUT
5 GND
6 VIDEO IN
7 FTZ MUTE
To Terminal Board
S1001
8 STD/SP
7 ACK
6 PBC
5 GND
4 PB Y
3 GND
2 D.O.C 1H DL
1 PB +9V
To Pre Amp

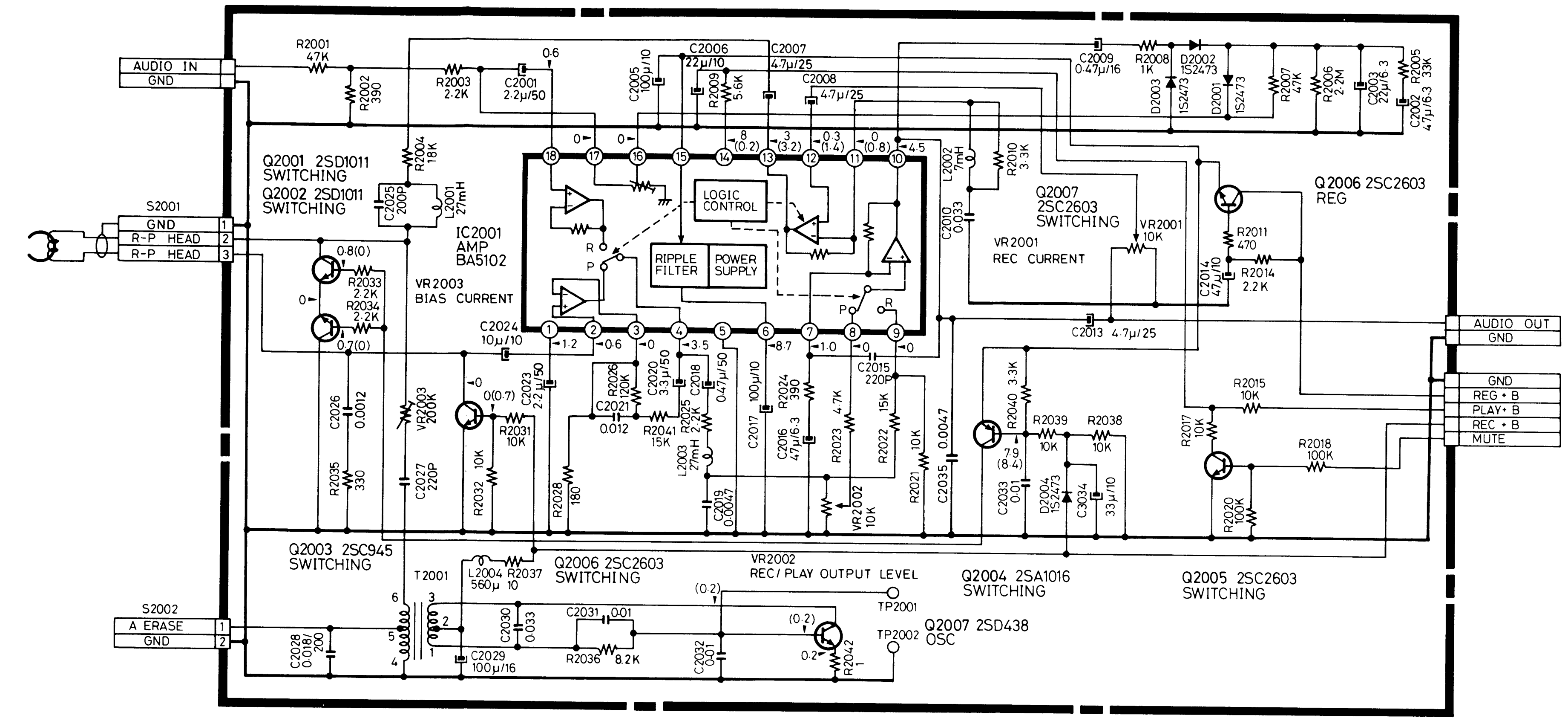
P.C.B. VD-1 VIDEO CIRCUIT (Continent)


BUFFER Q1030 2SC930E,D
BUFFER Q1029 2SC930E,D
LIM Q1028 2SC930E,D
BUFFER Q1027 2SA838B,C
BUFFER Q1026 2SC930E,D
SWITCHING Q1025 2SC945P,Q
SWITCHING Q1024 2SC945P,Q
SWITCHING Q1022 2SC930E,D
B.A.T FAST ACC
CAR BAL.
BPF 1002
T1006
T1007
X1001
Q1033 Q1032 Q1031 2SC930E,D
Q1033 2SC930E,D
Q1032 2SC930E,D
Q1031~1033 AMP
IC1005 M51437P
BURST GATE
AMP
ACC AMP
PILOT BURST INS
PILOT BURST CLEANG
CONV
APC PD
BG
ACC DET
LIM
SHIFTER
S&H
APC PD
IC1008 LA7016
Q1034 BUFFER 2SC930E,D
Q1035 BUFFER 2SA838B,C
X1002
T1008
ACC SET
BPF1001
DL1004
T1009
BUFFER
Q1042 2SC930E,D
Q1041 AMP 2SC930E,D
Q1040 Q1039 Q1038 Q1037 Q1036
COMB
CREC CURR
TP1017
TP1018
TP1019
T1011
T1010
L1029
TP1011
Q1043 2SC945Q,R
VCO SET
AFC OFF SET
IC1006 M51438P
CONV
APC D
VCO
CLAMP
SYNC SEP
HALF H KILLER
HD GEN
S&H
TRAPE SOIDAL
TP 1012
Q1044 2SC930E,D
IC1007 M50180P
COUNTER
1/2
1/8
DECODE
1/8
1/32
OSC
CF1001
L1039
Q1047 2SC1645
Q1040 2SC930E,D
Q1039 2SC930E,D
Q1038 2SC930E,D
Q1037 2SC930E,D
Q1036 2SC930E,D
Q1036~Q1040 COMB FILTER
Q1055 2SC930E,D
DL1005
T1012
BURST WIDTH
SP 1HDL LEVEL
TP1023
TP1016
TP1022
1D DET ADJ
IC1009 M51439P
BG1
BG2
LIM
1D DET
FF
MM
MM
FF
VCO
DELAY
AFC DET
TP1025
TP1024
AFC SET
BURST PHASE
Q1046 2SC945P,Q
Q1045 2SC945P,Q
Q1054 2SC930E,D
Q1053 2SC930E,D
Q1052 2SC930E,D
T1001
Q1048 2SA608E,F
Q1049 2SC536E,F
Q1050 2SC536E,F
Q1003 2SC930
Q1002 2SA933
D1003 1S2473
Q1005 2SA608E,F
Q1064 2SC930E,D
TP1003
CAR SET
EE LEVEL
TP1001
DL1001
T1003
Q1056 2SC930E,D
IC1001 LA7020
SYNC SEP
CLAMP
EF
AGC AMP
FM MODULATOR
EMPH AMP
B/W CLIP
SYNC AGC
PEAK AGC
N.L EMPH
TP1010
DEV
SYNC AGC
PEAK AGC
WC
DC
Q1051 2SA838B,C
TP1004
D1004 1S2473
Q1012
PB LEVEL
TP 1007
EX PAND
IC1002 LA7025
DE-MODULATOR
DE-EMPH
N.L DE-EMPH
APER-TURE
SYNC SEP
VDINS W-CLIP
CLAMP
Y/C MIX
NOISE CAN
AMP
DL1002
IC1003 LA7013
DE-MODULATOR
NOI CAN
Q1015 2SA838B,C
Q1014 2SC930E,D
AMP
Q1012 2SC9
Q1011 2SA8
Q1010 2SA8

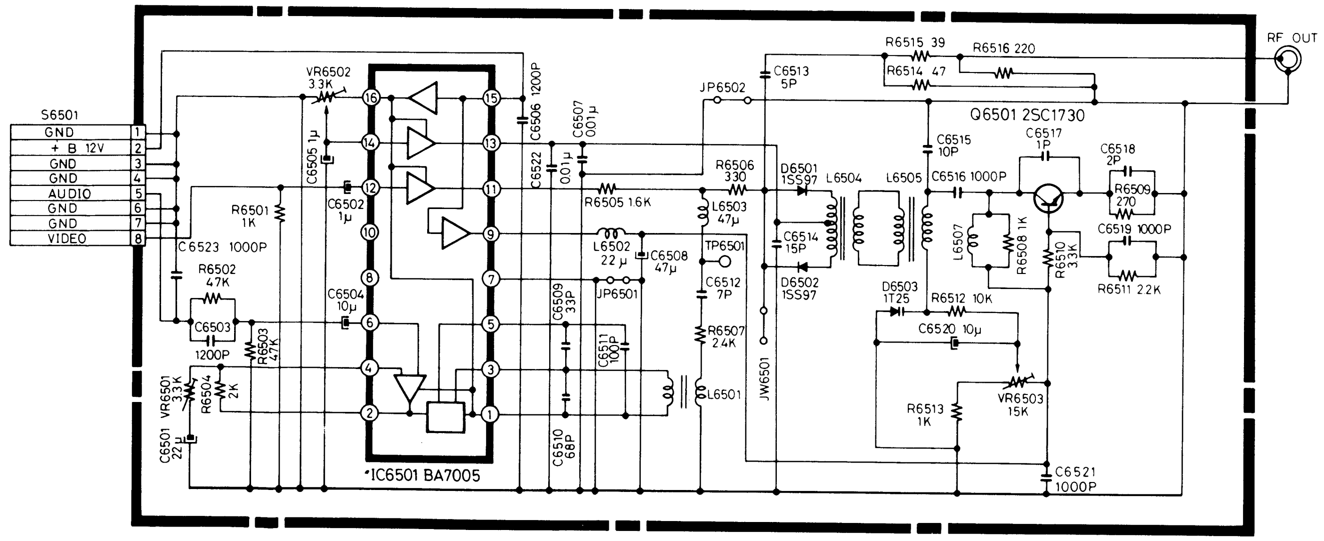
P.C.B. VD-1 VIDEO CIRCUIT (Continent)


LIM Q1028 2SC930E,D
BUFFER Q1027 2SA838B,C
BUFFER Q1026 2SC930E,D
SWITCHING Q1025 2SC945P,Q
SWITCHING Q1024 2SC945P,Q
SWITCHING Q1022 2SC930E,D
IC1008 LA7016
Q1020 2SB544E
D1001 1S2473
D1006 1S2473
RY1001
TP1009
T1001
Q1048 2SA608E,F
Q1049 2SC536E,F
Q1050 2SC536E,F
Q1003 2SC930
Q1002 2SA933
Q1001 2SC945
Q1019 2SC945
Q1021 2SC945
Q1005 2SA608E,F
Q1064 2SC930E,D
Q1004 2SC930E,D
S1004
1 PAUSE SW
2 A MUTE
3 REC • EE
4 REC • P
5 SP H
From Syscon
S1005
1 GND
2 REG +12V
3 REG +9V
From Power
To Conv
AMP
ACC AMP
PILOT BURST INS
PILOT BURST CLEANG
CONV
APC PD
BG
ACC DET
LIM
SHIFTER
S&H
IC1001 LA7020
SYNC SEP
CLAMP
EF
AGC AMP.
FM MODULATOR
EMPH AMP
B/W CLIP
SYNC AGC
PEAK AGC
N.L EMPH
S1003
1 REM. PAUSE
2 PB +9V
3 AUDIO IN
4 GND
5 AUDIO OUT
6 GND
To Terminal Board
COMPRESS
Q1056 2SC930E,D
Q1017 BUFFER 2SC1741R
S1007
1 COMP SYNC
2 RF SW
From Servo
Q1051 2SA838B,C
S1002
1 REC Y
2 REC +9V
3 REC C
4 GND
5 RF SW
DL1004
COMB
BUFFER
Q1042 2SC930E,D
Q1041 AMP 2SC930E,D
Q1040 2SC930E,D
Q1039 2SC930E,D
Q1038 2SC930E,D
Q1037 2SC930E,D
Q1036 2SC930E,D
Q1036~Q1040 COMB FILTER
Q1043 2SC945Q,R
Q1055 2SC930E,D
DL1005
BURST WIDTH
VCO SET
VCO
HD GEN
S&H
TRAPE SOIDAL
IC1009 M51439P
BG1
BG2
LIM
ID DET
FF
MM
VCO
DELAY
AFC DET
1/8
OSC
CF1001
PB LEVEL
EX PAND
IC1002 LA7025
DE-MODULATOR
DE-EMPH
N.L DE-EMPH
APER-TURE
SYNC SEP
VDINS W-CLIP
CLAMP
Y/C MIX
NOISE CAN
AMP
DL1006
To Conv
S1006
1 TEST +9V
2 REG +9V
3 GND
4 LINE OUT
5 GND
6 VIDEO IN
7 FTZ MUTE
To Terminal Board
Q1063 2SC945P,Q AMP
Q1012 BUFFER 2SC930E,D
Q1011 BUFFER 2SA838B,C
Q1010 AMP 2SA838B,C
Q1009 2SC930E,D
Q1016 2SC1741R BUFFER
DL1002
IC1003 LA7013
DE-MODULATOR
NOI CAN
DL1003
S1001
8 STD/SP
7 ACK
6 PBC
5 GND
4 PB Y
3 GND
2 D.O.C. 1H DL
1 PB +9V
To Pre Amp
Q1047 2SC1645
Q1046 2SC945P,Q
Q1045 2SC945P,Q
Q1054 2SC930E,D
Q1053 2SC930E,D
Q1052 2SC930E,D
Q1015 AMP 2SA838B,C
Q1014 2SC930E,D BUFFER
Q1013 2SC930E,D BUFFER

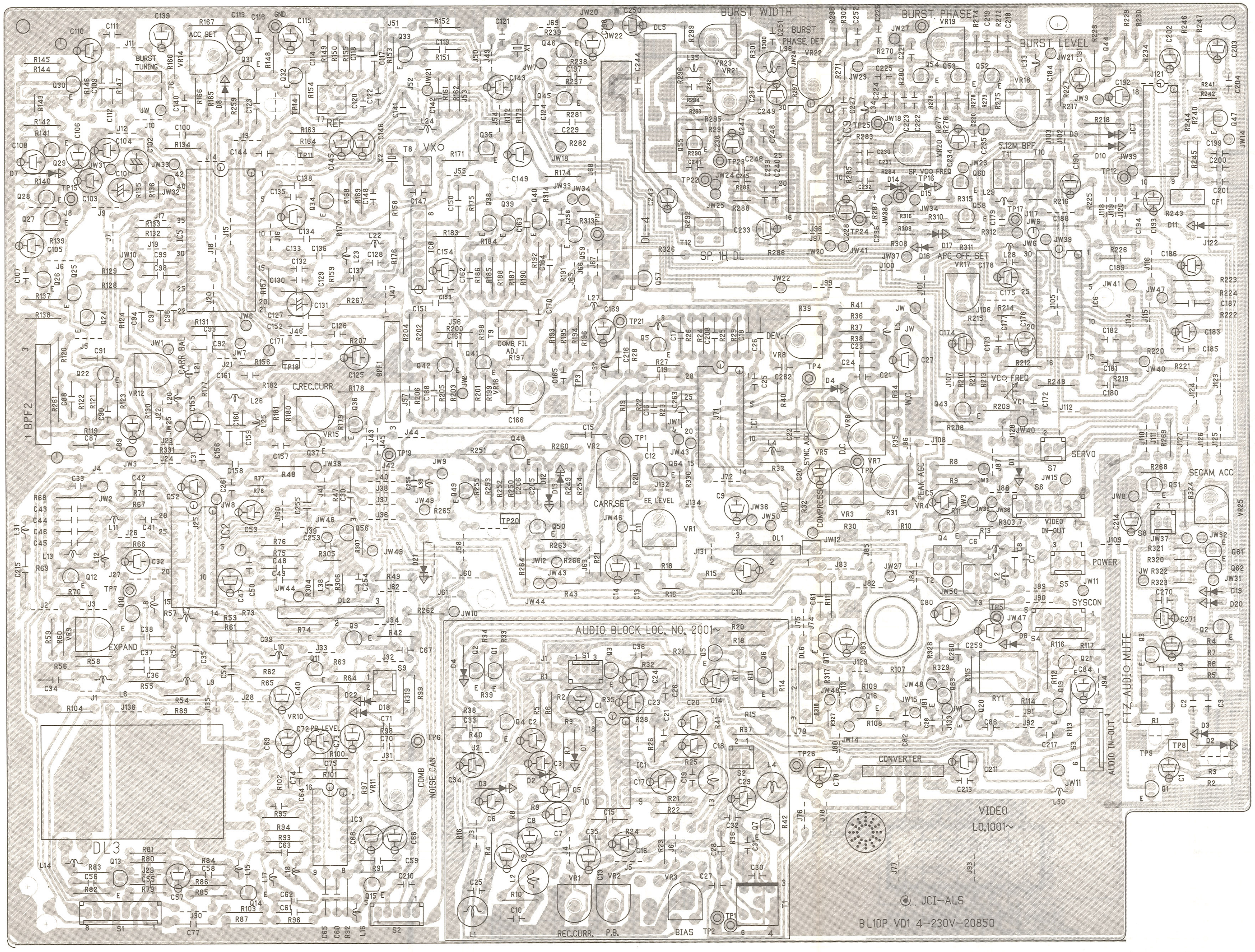
P.C.B. VD-1 AUDIO CIRCUIT


AUDIO IN
GND
R2001 47K
R2002 390
R2003 2.2K
C2001 2.2μ/50
C2005 100μ/10
C2006 22μ/10
R2009 5.6K
C2007 4.7μ/25
C2008 4.7μ/25
C2009 0.47μ/16
R2008 1K
D2002 1S2473
D2003 1S2473
D2001 1S2473
R2007 47K
R2006 2.2M
C2003 22μ/6.3
C2002 47μ/6.3
R2005 33K
S2001
GND
R-P HEAD
R-P HEAD
Q2001 2SD1011 SWITCHING
Q2002 2SD1011 SWITCHING
R2004 18K
C2025 200P
L2001 27mH
IC2001 AMP BA5102
VR2003 BIAS CURRENT
LOGIC CONTROL
RIPPLE FILTER
POWER SUPPLY
L2002 7mH
R2010 3.3K
C2010 0.033
Q2007 2SC2603 SWITCHING
VR2001 10K
VR2001 REC CURRENT
Q2006 2SC2603 REG
R2011 470
C2014 47μ/10
R2014 2.2K
C2013 4.7μ/25
AUDIO OUT
GND
R2033 2.2K
R2034 2.2K
C2024 10μ/10
C2026 0.0012
R2035 330
VR2003 200K
C2027 220P
C2023 2.2μ/50
R2031 10K
R2032 10K
R2028 180
R2026 120K
C2021 0.012
C2020 3.3μ/50
R2041 15K
C2018 0.47μ/50
R2025 2.2K
L2003 27mH
C2019 0.0047
C2017 100μ/10
C2016 47μ/6.3
R2024 390
R2023 4.7K
VR2002 10K
R2022 15K
C2015 220P
R2021 10K
C2035 0.0047
R2040 3.3K
C2033 0.01
R2039 10K
R2038 10K
D2004 1S2473
C3034 33μ/10
R2015 10K
R2017 10K
R2018 100K
R2020 100K
GND
REG • B
PLAY • B
REC • B
MUTE
Q2003 2SC945 SWITCHING
T2001
L2004 560μ
R2037 10
Q2006 2SC2603 SWITCHING
VR2002 REC/PLAY OUTPUT LEVEL
Q2004 2SA1016 SWITCHING
Q2005 2SC2603 SWITCHING
S2002
A ERASE
GND
C2028 0.018/200
C2029 100μ/16
C2030 0.033
C2031 0.01
R2036 8.2K
C2032 0.01
TP2001
TP2002
Q2007 2SD438 OSC
R2042 1

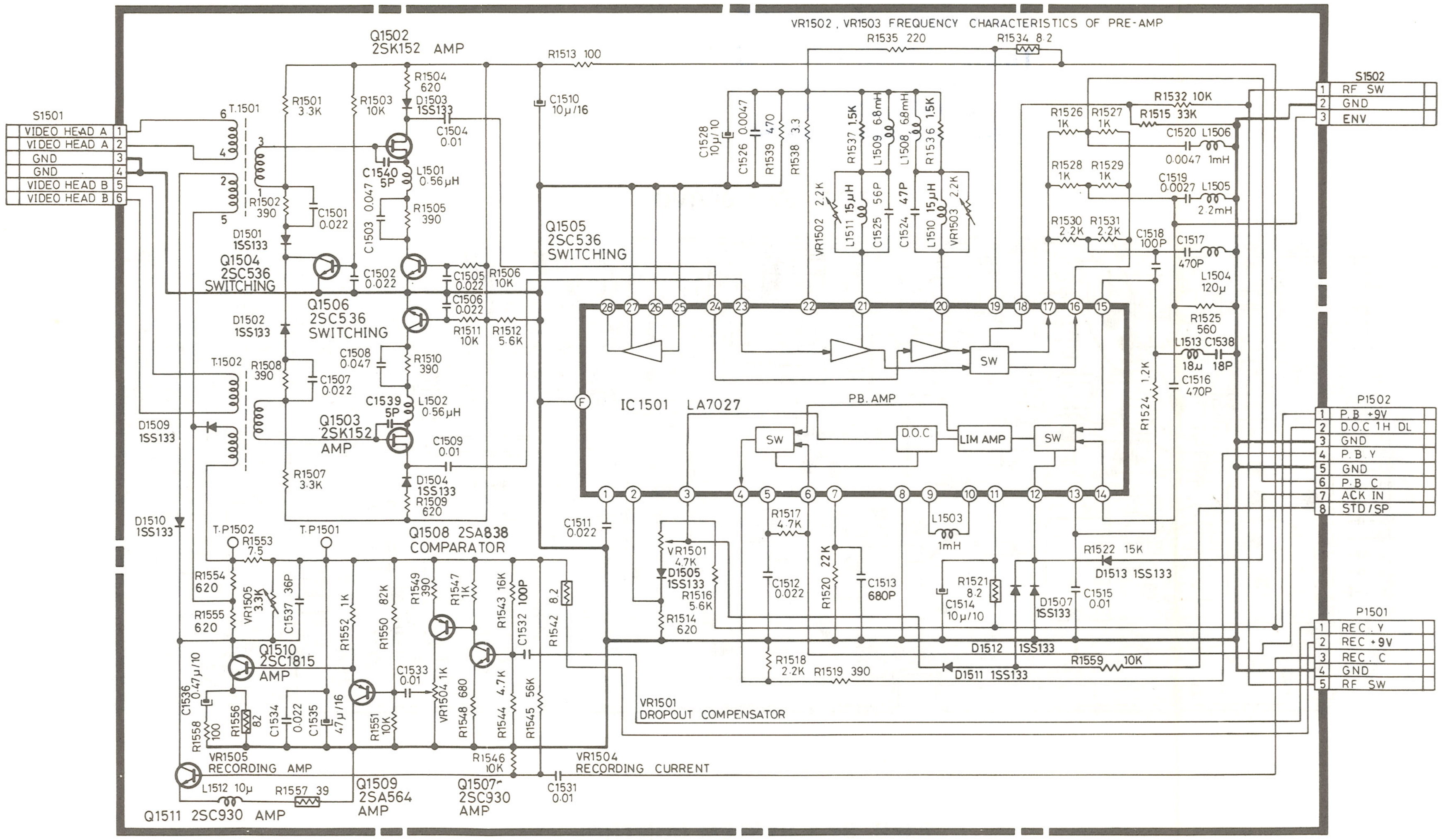
P.C.B. CV-1 RF CONVERTER CIRCUIT


S6501
GND
+B 12V
GND
GND
AUDIO
GND
GND
VIDEO
VR6502 3.3K
C6506 1200P
C6505 1μ
C6507 0.01μ
C6522 0.01μ
R6501 1K
C6502 1μ
C6523 1000P
R6502 47K
C6503 1200P
R6503 47K
C6504 10μ
C6501 22μ
VR6501 3.3K
R6504 2K
*IC6501 BA7005
C6509 33P
C6510 68P
C6511 100P
R6505 1.6K
L6502 22μ
JP6501
C6508 47μ
R6506 330
L6503 47μ
TP6501
C6512 7P
R6507 2.4K
L6501
JP6502
JW6501
C6513 5P
R6515 39
R6516 220
R6514 47
RF OUT
Q6501 2SC1730
C6515 10P
D6501 1SS97
L6504
L6505
C6514 15P
D6502 1SS97
C6516 1000P
C6517 1P
C6518 2P
R6509 270
C6519 1000P
L6507
R6508 1K
R6510 3.3K
R6511 2.2K
D6503 1T25
R6512 10K
C6520 10μ
R6513 1K
VR6503 15K
C6521 1000P

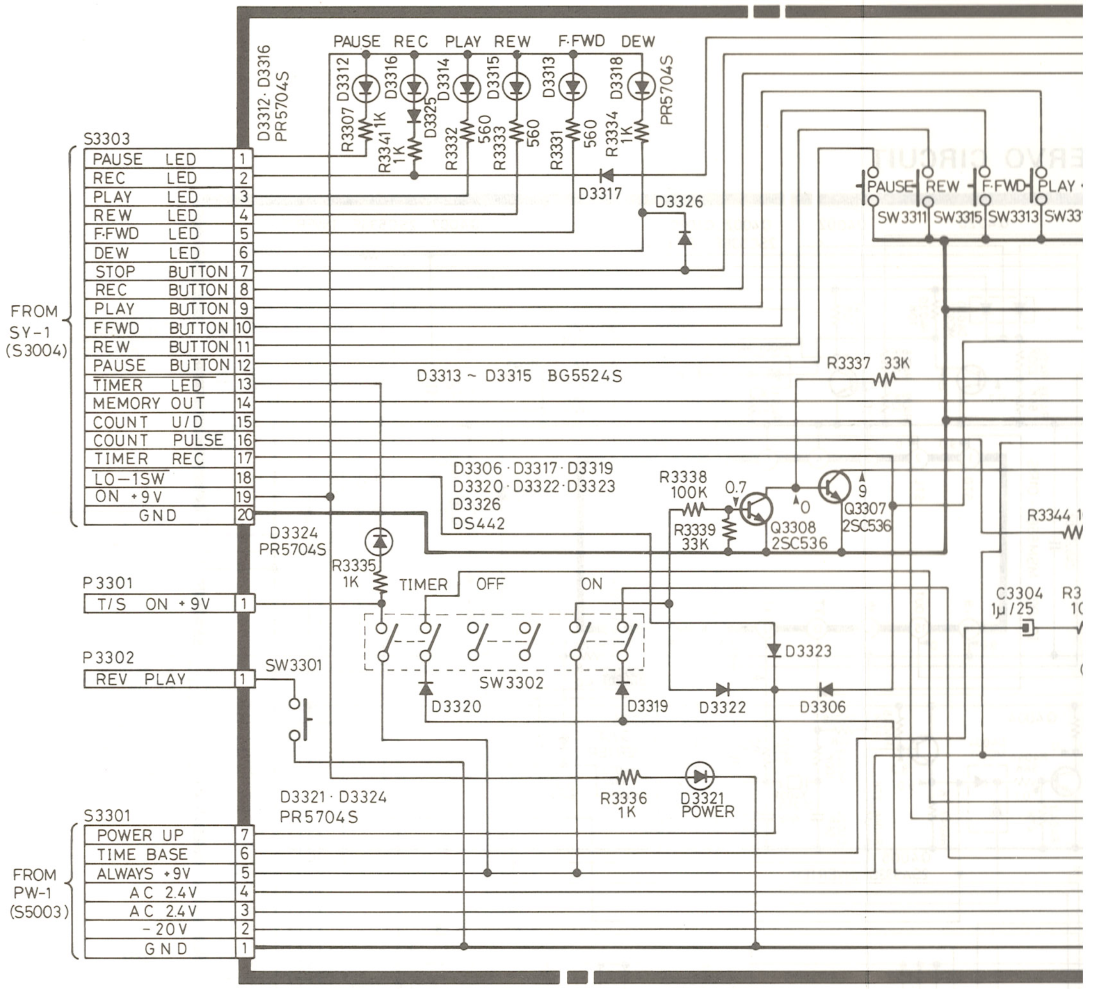
P.C.B. VD-1 (AD-1) VIDEO/AUDIO


BURST WIDTH
BURST PHASE
BURST PHASE DET
BURST LEVEL
BURST TUNING
ACC SET
GND
REF
VXO
5.12M BPF
SP VCO FREQ
APC OFF SET
SP 1H DL
DL-4
DL5
COMB FIL ADJ
CARR BAL
C.REC.CURR
BPF1
1 BPF2
DEV.
VCO FREQ
SERVO
SECAM ACC
SYNC AGC
COMPRESS
PEAK AGC
W/C
CARR.SET
EE LEVEL
DL1
DL2
DL6
VIDEO IN-OUT
POWER
SYSCON
EXPAND
PB LEVEL
COMB NOISE CAN
DL3
AUDIO BLOCK LOC. NO. 2001~
CONVERTER
VIDEO LO.1001~
JCI-ALS
BL1DP. VD1 4-230V-20850
REC.CURR.
P.B.
BIAS
AUDIO IN-OUT
F/Z AUDIO MUTE

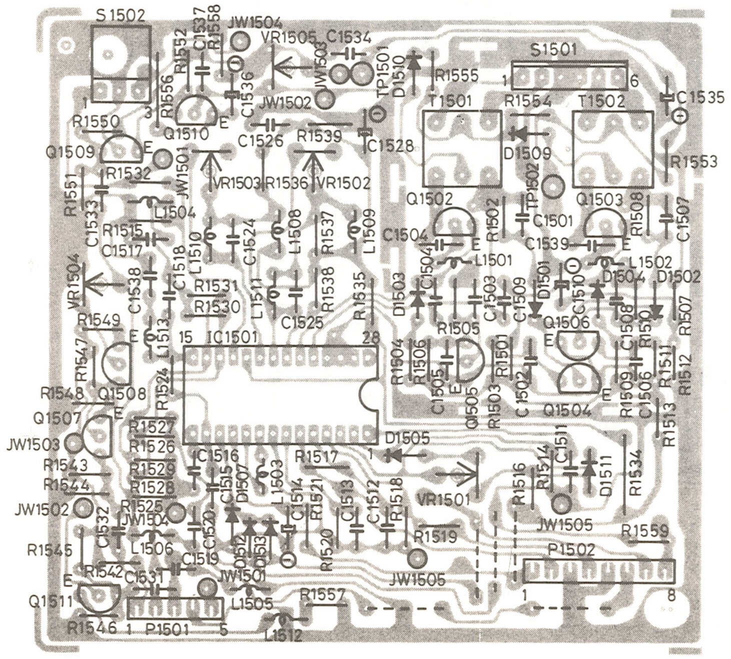
P.C.B. VP-1 VIDEO PRE-AMP CIRCUIT


VR1502, VR1503 FREQUENCY CHARACTERISTICS OF PRE-AMP
S1501
VIDEO HEAD A
VIDEO HEAD A
GND
GND
VIDEO HEAD B
VIDEO HEAD B
T1501
T1502
Q1502 2SK152 AMP
Q1503 2SK152 AMP
Q1504 2SC536 SWITCHING
Q1505 2SC536 SWITCHING
Q1506 2SC536 SWITCHING
Q1508 2SA838 COMPARATOR
Q1509 2SA564 AMP
Q1510 2SC1815 AMP
Q1507 2SC930 AMP
Q1511 2SC930 AMP
IC 1501 LA7027
PB. AMP
D.O.C
LIM AMP
SW
VR1501 DROPOUT COMPENSATOR
VR1504 RECORDING CURRENT
VR1505 RECORDING AMP
T.P1502
T.P1501
S1502
RF SW
GND
ENV
P1502
P.B +9V
D.O.C 1H DL
GND
P.B Y
GND
P.B C
ACK IN
STD/SP
P1501
REC Y
REC +9V
REC C
GND
RF SW

P.C.B. SY-2 TIMER/OPERATIO


PAUSE REC PLAY REW F.FWD DEW
D3312·D3316 PR5704S
S3303
PAUSE LED
REC LED
PLAY LED
REW LED
F.FWD LED
DEW LED
STOP BUTTON
REC BUTTON
PLAY BUTTON
F.FWD BUTTON
REW BUTTON
PAUSE BUTTON
TIMER LED
MEMORY OUT
COUNT U/D
COUNT PULSE
TIMER REC
LO-1SW
ON +9V
GND
FROM SY-1 (S3004)
D3313 ~ D3315 BG5524S
D3306·D3317·D3319
D3320·D3322·D3323
D3326
DS442
D3324 PR5704S
Q3308 2SC536
Q3307 2SC536
P3301
T/S ON +9V
P3302
REV PLAY
SW3301
SW3302
TIMER OFF ON
D3321·D3324 PR5704S
D3321 POWER
S3301
POWER UP
TIME BASE
ALWAYS +9V
AC 24V
AC 24V
-20V
GND
FROM PW-1 (S5003)
PAUSE REW F.FWD PLAY
SW3311 SW3315 SW3313

P.C.B. VP-1 VIDEO PRE-AMP


S1502
S1501
T1501
T1502
IC1501
Q1502
Q1503
Q1504
Q1506
Q1508
Q1509
Q1510
Q1511
P1501
P1502
VR1501
VR1502
VR1503
VR1504
VR1505

IC 1501	
PIN No.	Voltage
1	1.4
2	0.5
3	2.7
4	6.1
5	4.7
6	4.7
7	5.0
8	—
9	6.5
10	6.5
11	8.7
12	4.4
13	5.0
14	5.0
15	5.0
16	5.7
17	5.6
18	—
19	8.6
20	4.8
21	4.8
22	4.8
23	0.8
24	0.8
25	—
26	—
27	—
28	—

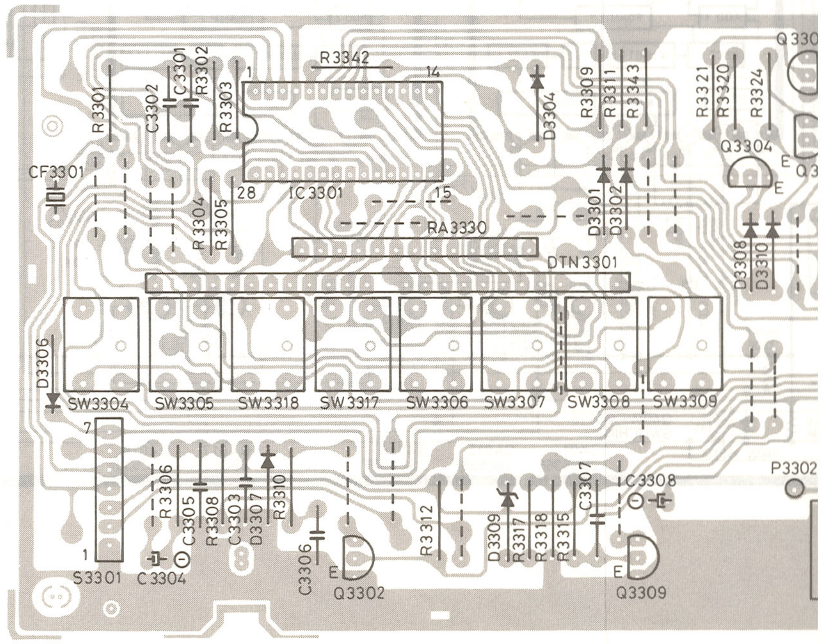
Transistor		
Q No.	B.E.C	Voltage
1502	D	3.2
1503	S	2.1
	G	1.3
1504	C	0
	E	0
	B	0.7
1505	C	0
1506	E	0
	B	0.7
1507	C	(6.9)
	E	(1.3)
	B	(1.9)
1508	C	(2.7)
	E	(7.5)
	B	(6.9)
1509	C	0
	E	(2.0)
	B	(1.3)
1510	C	(6.8)
	E	(1.3)
	B	(2.0)
1511	C	(6.8)
	E	(0.3)
	B	(1.0)

NOTE:
( ) REC Mode
other PLAY Mode

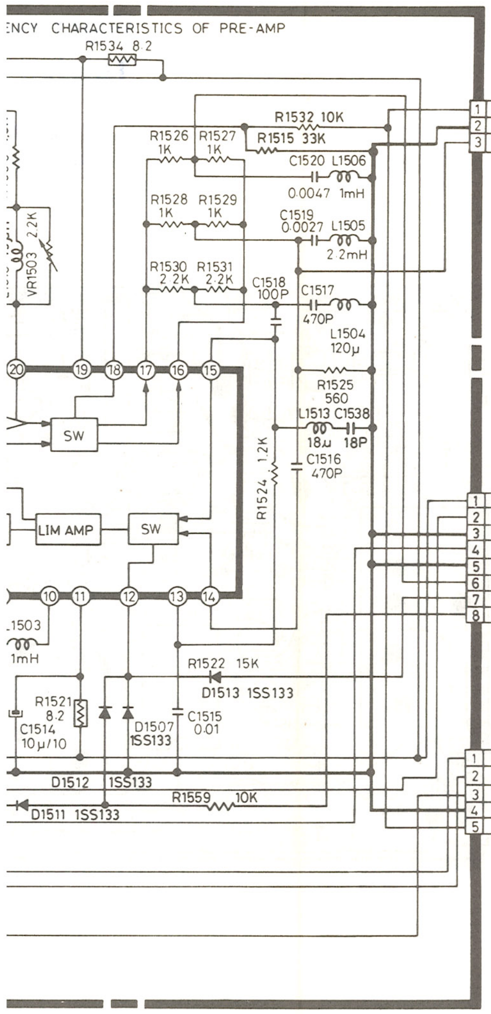
NOTE

SW3305	SW3306	SW3318	SW3308
MEMORY/ HOUR	REC STOP	DAY	SET
SW3304	SW3307	SW3309	SW3317
RESET/ MIN	REC START	COUNTER/ CLOCK	REC DAY

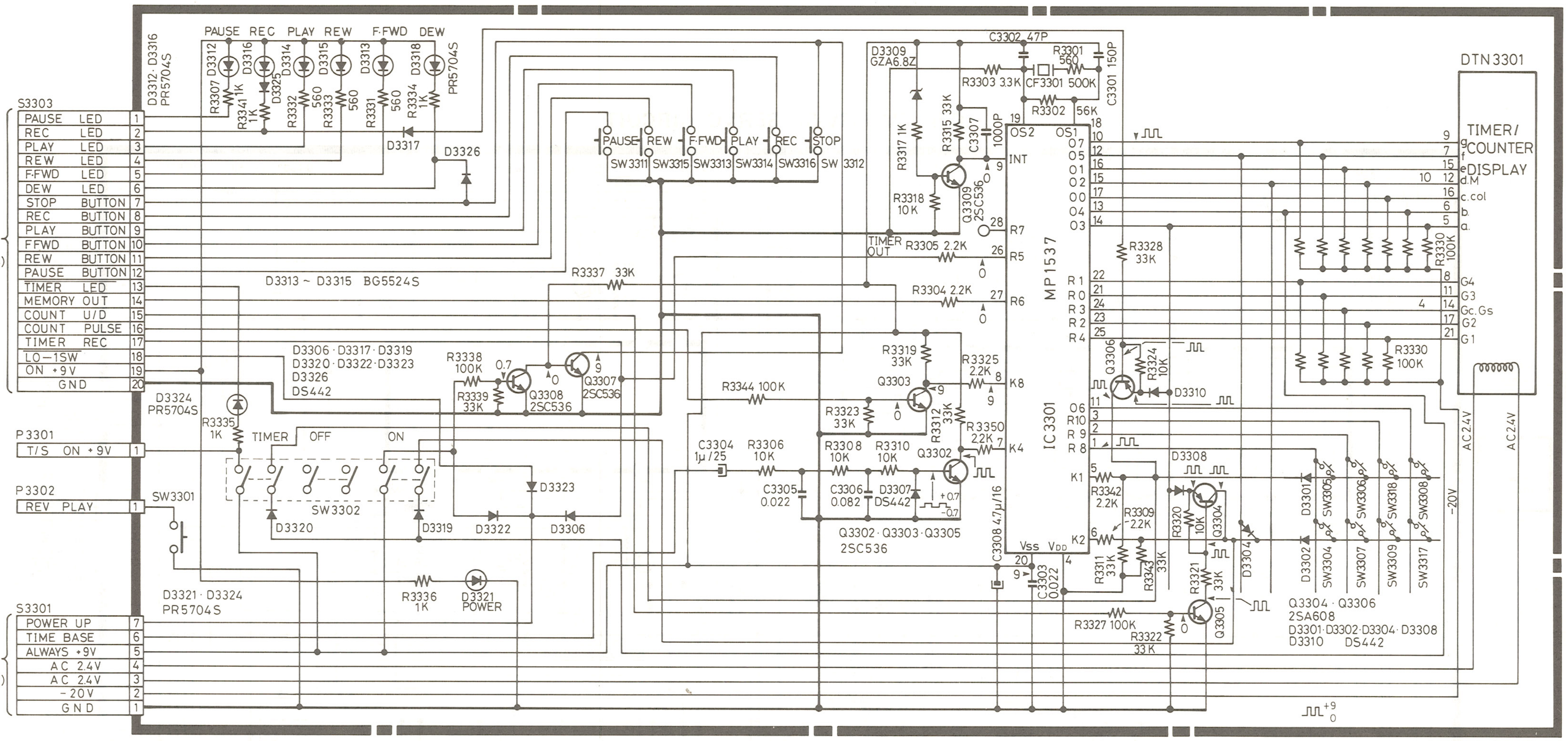
P.C.B. SY-2 TIME


R3342
IC3301
RA3330
DTN3301
CF3301
SW3304
SW3305
SW3318
SW3317
SW3306
SW3307
SW3308
SW3309
S3301
C3304
Q3302
Q3309
Q3304
P3302

T


ENCY CHARACTERISTICS OF PRE-AMP
S1502
RF SW
GND
ENV
P1502
P.B +9V
D.O.C 1H DL
GND
P.B Y
GND
P.B C
ACK IN
STD/SP
P1501
REC Y
REC +9V
REC C
GND
RF SW
LIM AMP
SW

P.C.B. SY-2 TIMER/OPERATION KEY-BOARD SWITCH CIRCUIT


S3303
PAUSE LED
REC LED
PLAY LED
REW LED
F.FWD LED
DEW LED
STOP BUTTON
REC BUTTON
PLAY BUTTON
FFWD BUTTON
REW BUTTON
PAUSE BUTTON
TIMER LED
MEMORY OUT
COUNT U/D
COUNT PULSE
TIMER REC
LO-1SW
ON +9V
GND
FROM SY-1 (S3004)
P3301
T/S ON +9V
P3302
REV PLAY
S3301
POWER UP
TIME BASE
ALWAYS +9V
AC 24V
AC 24V
-20V
GND
FROM PW-1 (S5003)
SW3301
SW3302
TIMER
OFF
ON
IC3301
MP1537
DTN3301
TIMER/COUNTER DISPLAY
D3312·D3316 PR5704S
D3313 ~ D3315 BG5524S
D3306·D3317·D3319 D3320·D3322·D3323 D3326 DS442
D3321·D3324 PR5704S
Q3302·Q3303·Q3305 2SC536
Q3304·Q3306 2SA608
D3301·D3302·D3304·D3308 D3310 DS442
POWER

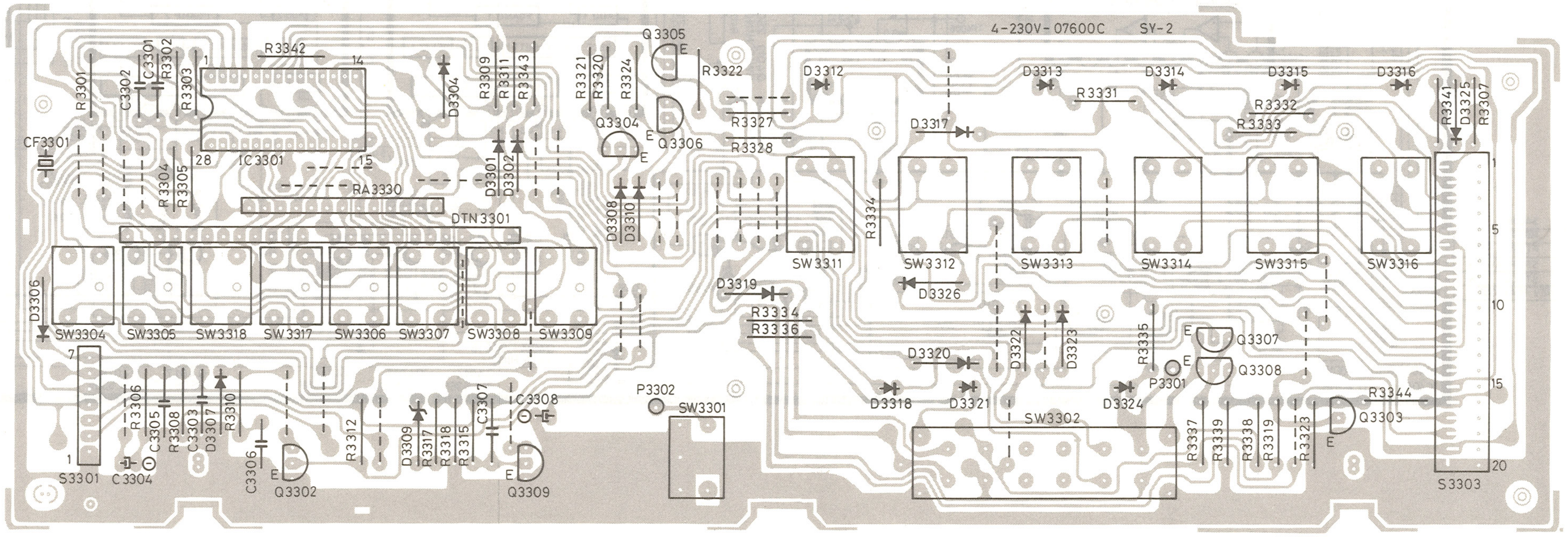
NOTE

SW3305	SW3306	SW3318	SW3308
MEMORY/ HOUR	REC STOP	DAY	SET
SW3304	SW3307	SW3309	SW3317
RESET/ MIN	REC START	COUNTER/ CLOCK	REC DAY

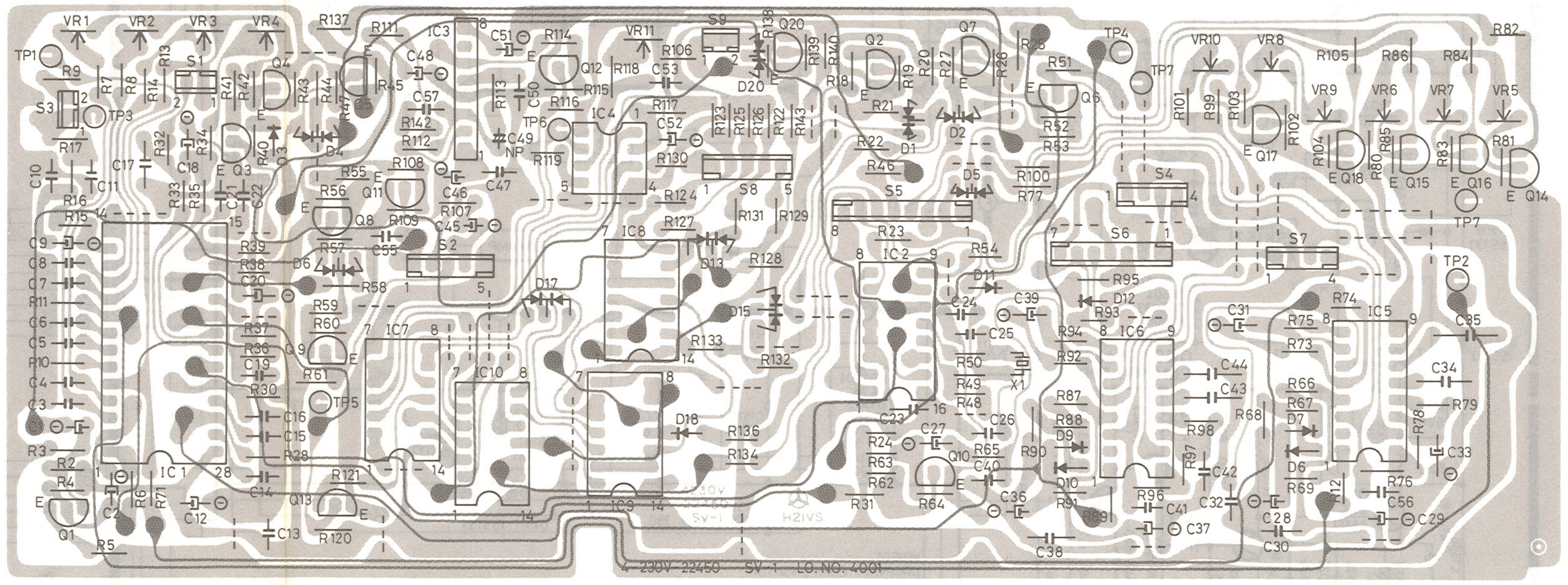
Transistor		
Q No.	B.E.C	Voltage
1502	D	3.2
1503	S	2.1
	G	1.3
1504	C	0
	E	0
	B	0.7
1505	C	0
1506	E	0
	B	0.7
1507	C	(6.9)
	E	(1.3)
	B	(1.9)
1508	C	(2.7)
	E	(7.5)
	B	(6.9)
1509	C	0
	E	(2.0)
	B	(1.3)
1510	C	(6.8)
	E	(1.3)
	B	(2.0)
1511	C	(6.8)
	E	(0.3)
	B	(1.0)

NOTE:
( ) REC Mode
other PLAY Mode

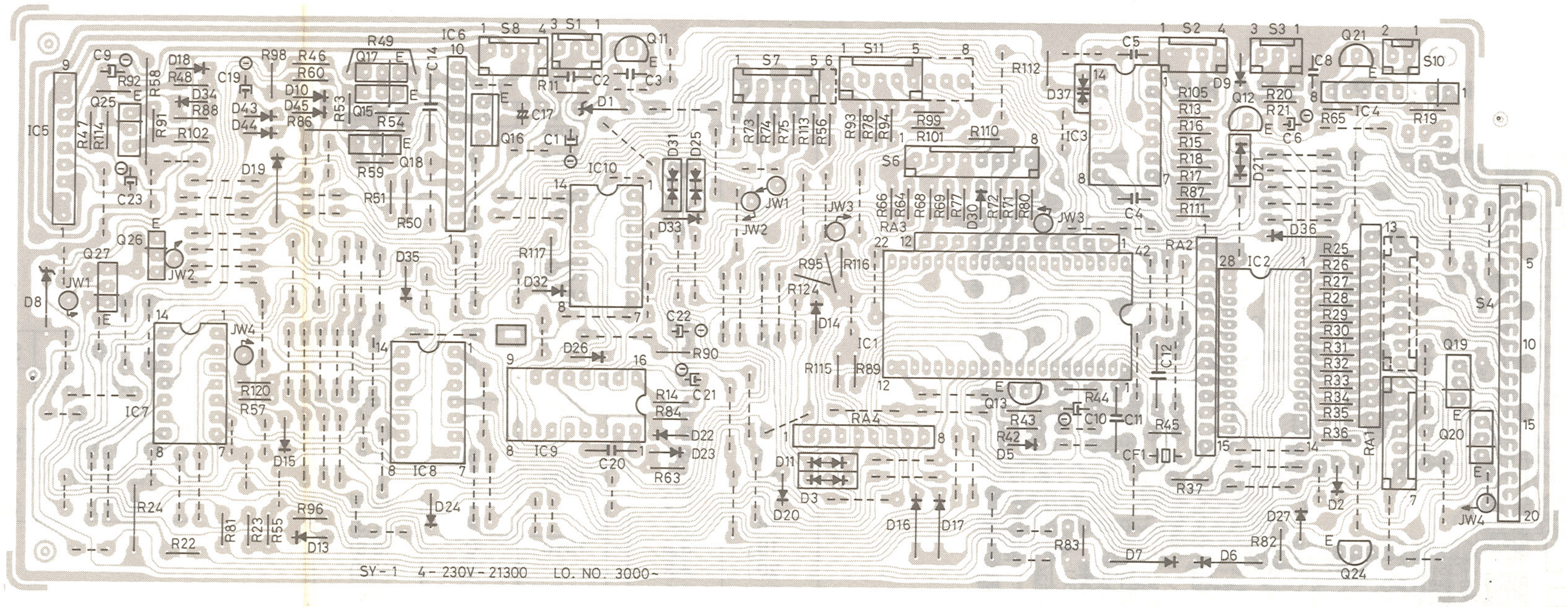
P.C.B. SY-2 TIMER/OPERATION KEY-BOARD SWITCH


4-230V-07600C SY-2
IC3301
DTN3301
CF3301
SW3304
SW3305
SW3318
SW3317
SW3306
SW3307
SW3308
SW3309
SW3311
SW3312
SW3313
SW3314
SW3315
SW3316
SW3301
SW3302
S3301
S3303
P3301
P3302

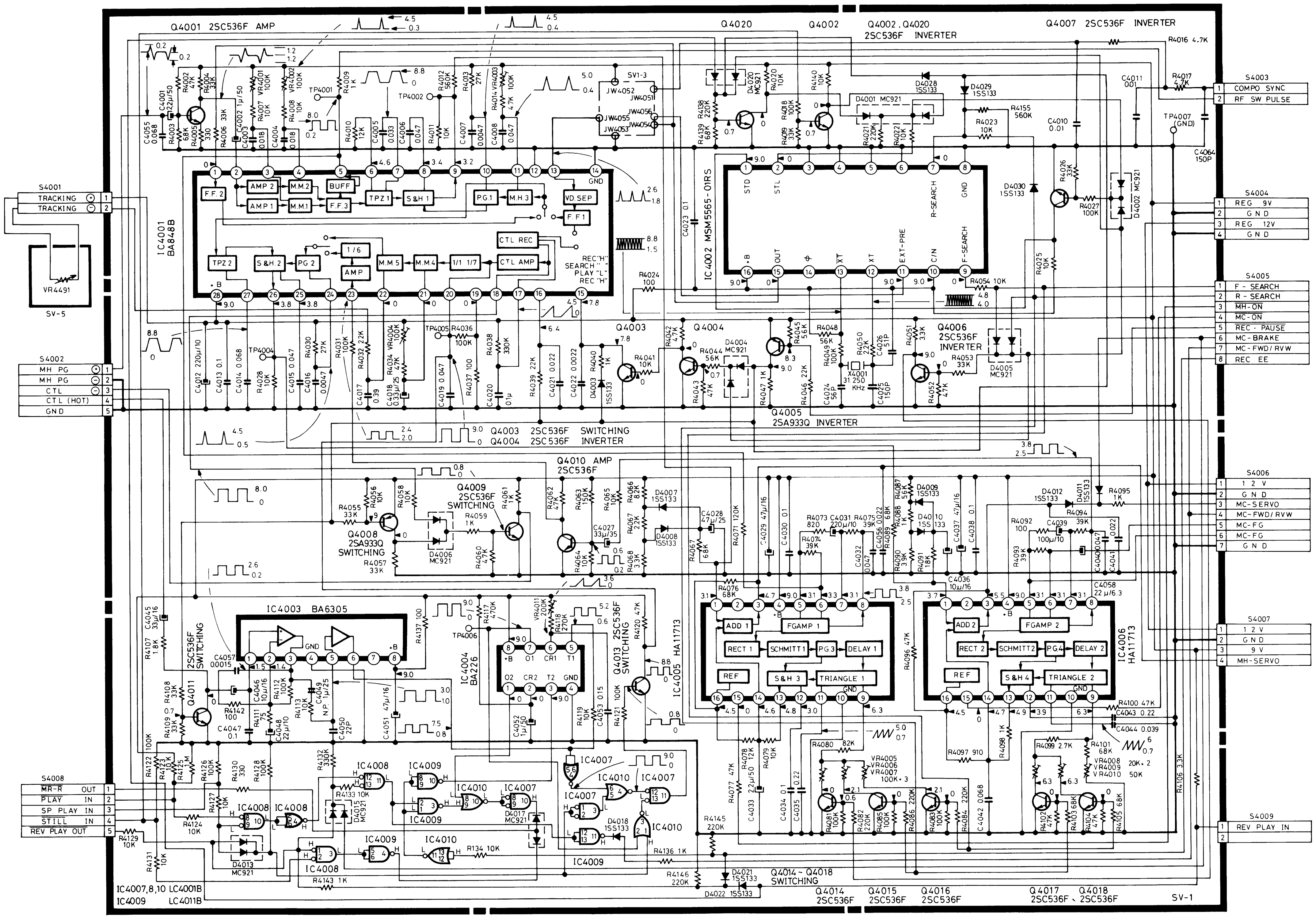
P.C.B. SV-1 SERVO


4-230V-22450 SV-1 LO.NO. 4001-

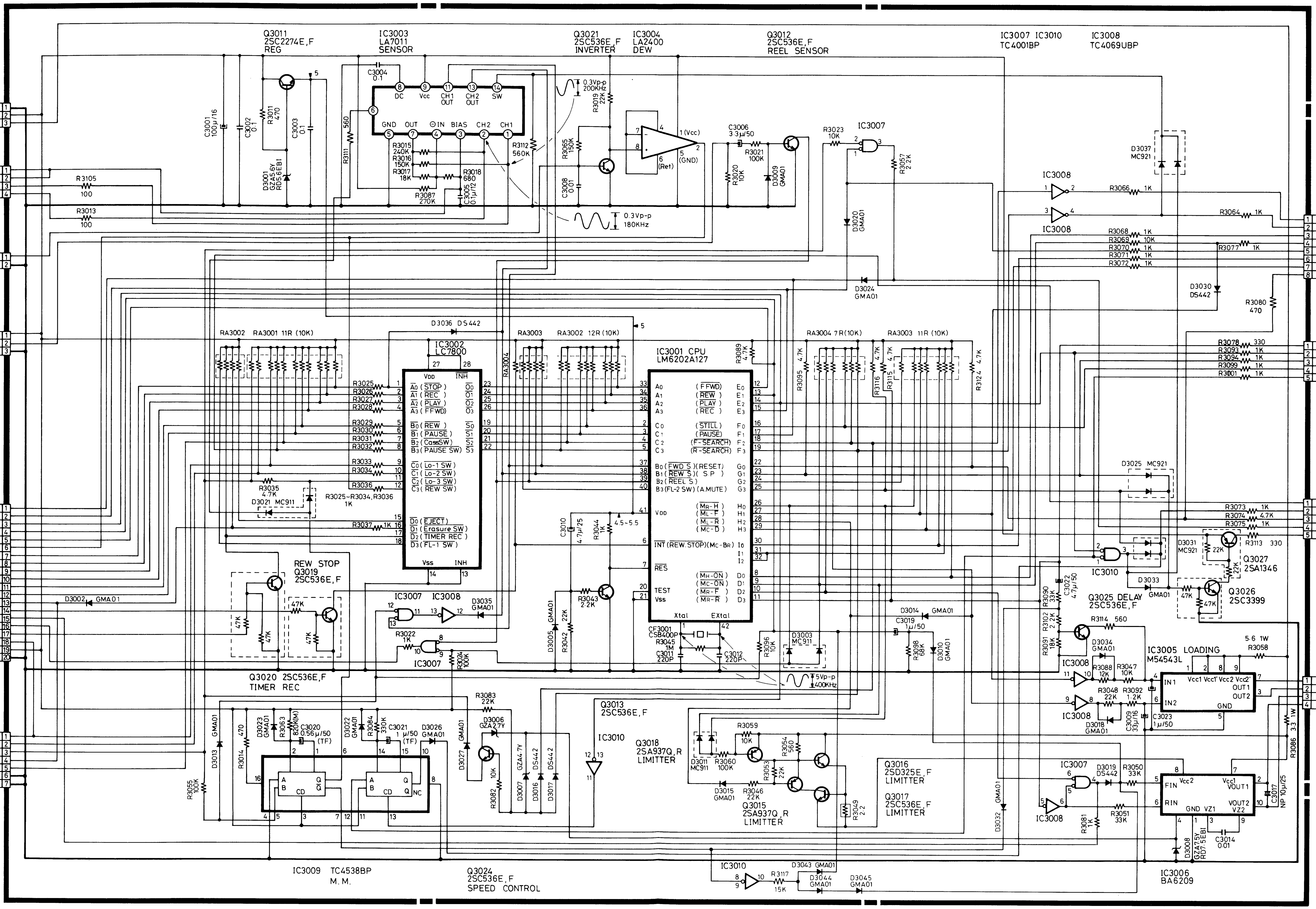
P.C.B. SY-1 SYSTEM CONTROL


SY-1 4-230V-21300 LO. NO. 3000-

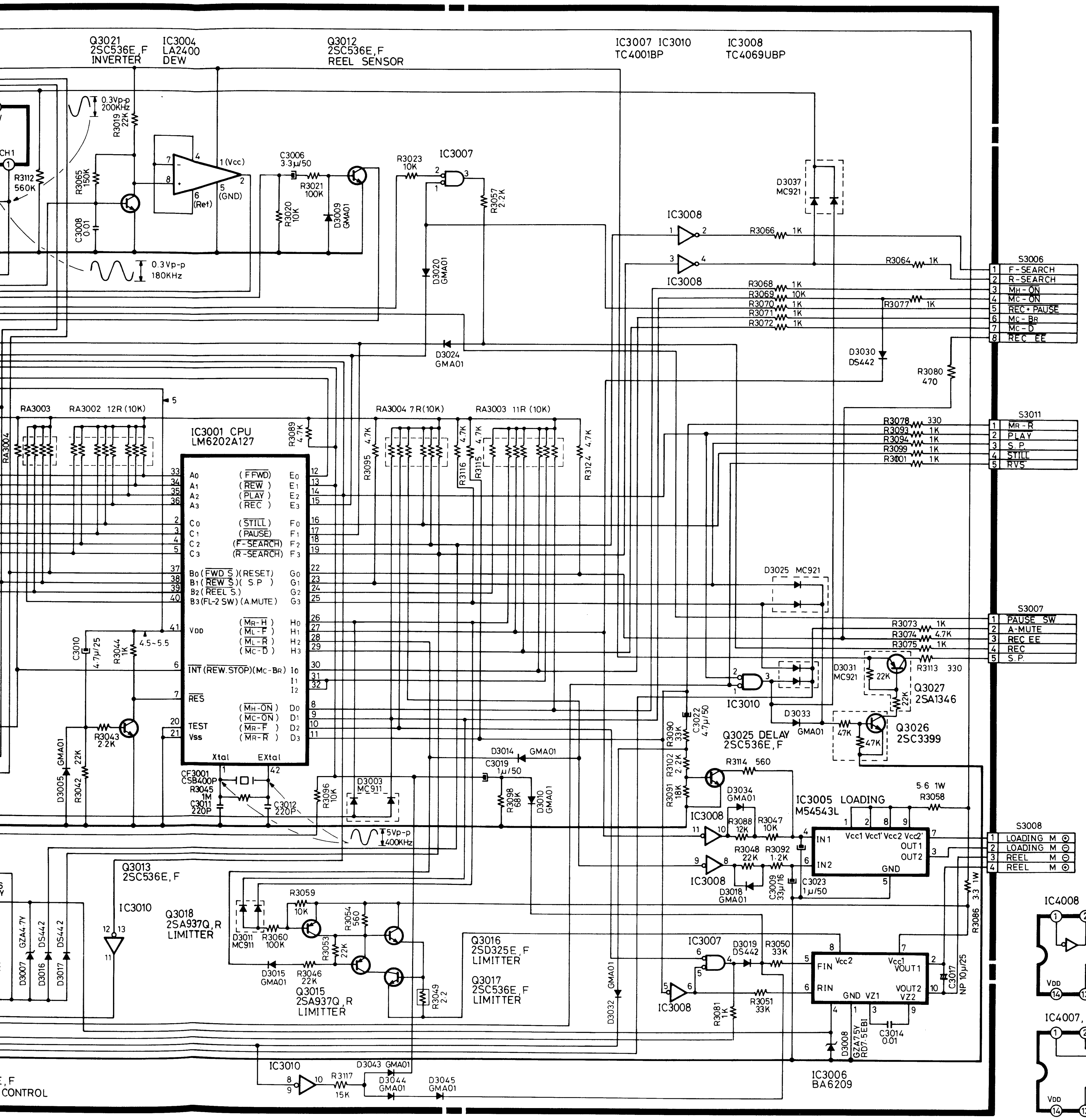
P.C.B. SV-1 (SV-5) SERVO CIRCUIT


Q4001 2SC536F AMP
Q4020
Q4002
Q4002, Q4020 2SC536F INVERTER
Q4007 2SC536F INVERTER
S4003
1 COMPO SYNC
2 RF SW PULSE
TP4007 (GND)
S4004
1 REG 9V
2 GND
3 REG 12V
4 GND
S4005
1 F-SEARCH
2 R-SEARCH
3 MH-ON
4 MC-ON
5 REC·PAUSE
6 MC-BRAKE
7 MC-FWD/RVW
8 REC EE
S4001
TRACKING ⊕ 1
TRACKING ⊖ 2
VR4491
SV-5
S4002
MH PG ⊕ 1
MH PG ⊖ 2
CTL ⊖ 3
CTL (HOT) 4
GND 5
IC4001 BA848B
F.F.2
AMP 2
M.M.2
BUFF
AMP 1
M.M.1
F.F.3
TPZ 1
S&H 1
PG 1
M.H 3
VD SEP
F.F 1
CTL REC
CTL AMP
TPZ 2
S&H 2
PG 2
1/6
AMP
M.M 5
M.M 4
1/1 1/7
REC "H" SEARCH " " PLAY "L" REC "H"
IC4002 MSM5565-01RS
STD
STL
R-SEARCH
GND
+B
OUT
XT
EXT-PRE
C/N
F-SEARCH
SV1-3
JW4052
JW4051
JW4055
JW4056
JW4053
JW4054
TP4001
TP4002
TP4004
TP4005
TP4006
Q4003
Q4004
Q4005 2SA933Q INVERTER
Q4006 2SC536F INVERTER
Q4003 2SC536F SWITCHING
Q4004 2SC536F INVERTER
X4001 31.250 KHz
Q4010 AMP 2SC536F
Q4009 2SC536F SWITCHING
Q4008 2SA933Q SWITCHING
D4006 MC921
D4004 MC921
D4005 MC921
D4001 MC921
D4002 MC921
D4020 MC921
D4028 1SS133
D4029 1SS133
D4030 1SS133
D4007 1SS133
D4008 1SS133
D4009 1SS133
D4010 1SS133
D4011 1SS133
D4012 1SS133
S4006
1 12V
2 GND
3 MC-SERVO
4 MC-FWD/RVW
5 MC-FG
6 MC-FG
7 GND
S4007
1 12V
2 GND
3 9V
4 MH-SERVO
IC4003 BA6305
Q4011 2SC536F SWITCHING
IC4004 BA226
Q4013 2SC536F SWITCHING
IC4005 HA11713
ADD 1
FGAMP 1
RECT 1
SCHMITT 1
PG 3
DELAY 1
REF
S&H 3
TRIANGLE 1
IC4006 HA11713
ADD 2
FGAMP 2
RECT 2
SCHMITT 2
PG 4
DELAY 2
S&H 4
TRIANGLE 2
VR4005 VR4006 VR4007 100K×3
VR4008 VR4009 VR4010 20K×2 50K
S4008
1 MR-R OUT
2 PLAY IN
3 SP PLAY IN
4 STILL IN
5 REV PLAY OUT
IC4007
IC4008
IC4009
IC4010
D4013 MC921
D4015 MC921
D4017 MC921
D4018 1SS133
D4021 1SS133
D4022 1SS133
Q4014 ~ Q4018 SWITCHING
S4009
1 REV PLAY IN
IC4007,8,10 LC4001B
IC4009 LC4011B
Q4014 2SC536F
Q4015 2SC536F
Q4016 2SC536F
Q4017 2SC536F
Q4018 2SC536F
SV-1

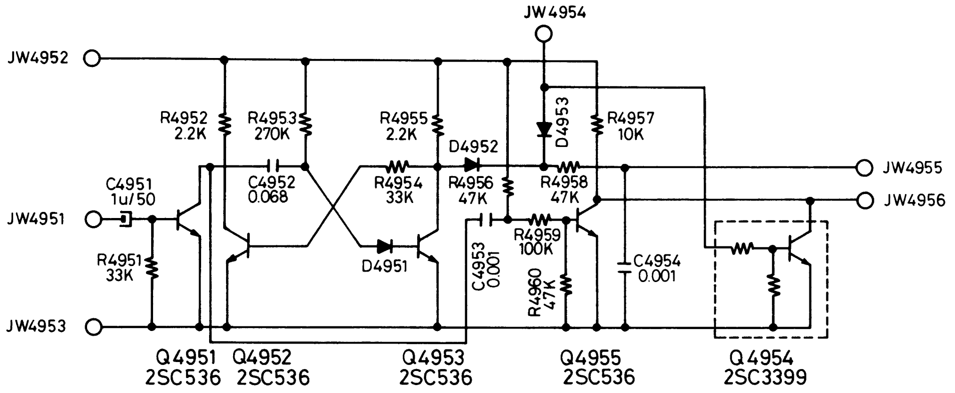
P.C.B. SY-1 SYSTEM CONTROL CIRCUIT


Q3011 2SC2274E,F REG
IC3003 LA7011 SENSOR
Q3021 2SC536E,F INVERTER
IC3004 LA2400 DEW
Q3012 2SC536E,F REEL SENSOR
IC3007 IC3010 TC4001BP
IC3008 TC4069UBP
S3001
GND
+9V
+12V
S3002
COMMON
COMMON
FWD SENSOR
REW SENSOR
S3010
DEW SENSOR
DEW SENSOR
S3003
REEL SENSOR
REEL SENSOR
REEL SENSOR
S3004
PAUSE LED
REC LED
PLAY LED
REW LED
FFWD LED
DEW LED
STOP button
REC button
PLAY button
FFWD button
REW button
PAUSE button
TIMER LED
REW STOP
COUNT DOWN
COUNT PULSE
TIMER REC
Lo-1 SW
+9V
GND
S3005
Lo-1 SW
Lo-2 SW
Lo-3 SW
Erasure P SW
Cassette SW
GND
GND
0.3Vp-p 200KHz
0.3Vp-p 180KHz
5Vp-p 400KHz
IC3002 LC7800
IC3001 CPU LM6202A127
RA3002 RA3001 11R (10K)
RA3003 RA3002 12R (10K)
RA3004 7R(10K) RA3003 11R (10K)
D3036 DS442
REW STOP Q3019 2SC536E,F
Q3020 2SC536E,F TIMER REC
IC3009 TC4538BP M.M.
Q3024 2SC536E,F SPEED CONTROL
Q3013 2SC536E,F
Q3018 2SA937Q,R LIMITTER
Q3015 2SA937Q,R LIMITTER
Q3016 2SD325E,F LIMITTER
Q3017 2SC536E,F LIMITTER
CF3001 CSB400P
S3006
F-SEARCH
R-SEARCH
MH-ON
MC-ON
REC+PAUSE
MC-BR
MC-D
REC EE
S3011
MR-R
PLAY
S.P
STILL
RVS
S3007
PAUSE SW
A-MUTE
REC EE
REC
S.P
Q3027 2SA1346
Q3026 2SC3399
Q3025 DELAY 2SC536E,F
IC3005 LOADING M54543L
IC3006 BA6209
S3008
LOADING M
LOADING M
REEL M
REEL M
5.6 1W R3058
R3086 3.3 1W

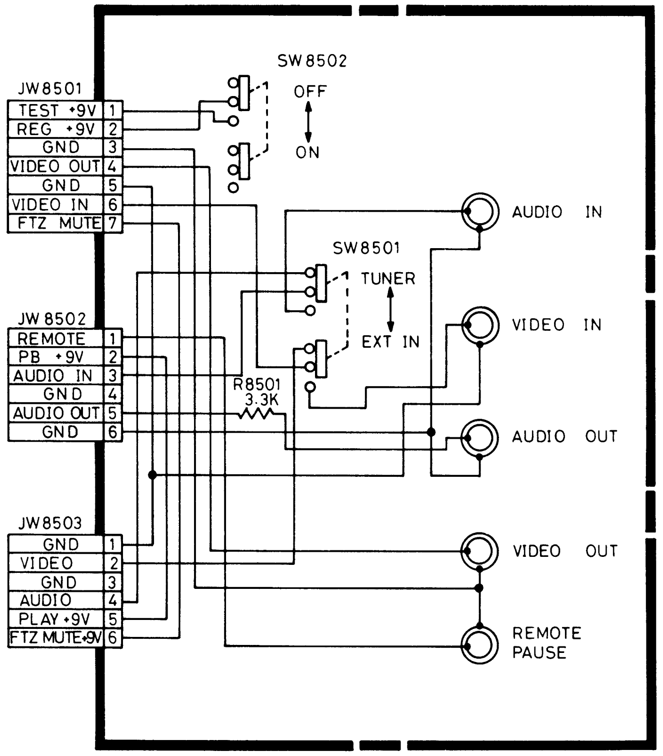
P.C.B. SY-1 SYSTEM CONTROL CIRCUIT


Q3021 2SC536E,F INVERTER
IC3004 LA2400 DEW
Q3012 2SC536E,F REEL SENSOR
IC3007 IC3010 TC4001BP
IC3008 TC4069UBP
0.3Vp-p 200KHz
0.3Vp-p 180KHz
R3019 22K
R3112 560K
R3065 150K
C3008 0.01
1 (Vcc)
5 (GND)
6 (Ret)
C3006 3.3µ/50
R3021 100K
R3020 10K
D3009 GMA01
R3023 10K
R3057 2.2K
D3020 GMA01
D3024 GMA01
D3037 MC921
R3066 1K
R3064 1K
R3068 1K
R3069 10K
R3070 1K
R3071 1K
R3072 1K
R3077 1K
D3030 DS442
R3080 470
S3006
F-SEARCH
R-SEARCH
MH-ON
MC-ON
REC+PAUSE
MC-BR
MC-D
REC EE
RA3003
RA3002 12R (10K)
RA3004
IC3001 CPU LM6202A127
R3089 4.7K
RA3004 7R (10K)
RA3003 11R (10K)
R3095 4.7K
R3116 4.7K
R3115 4.7K
R3124 4.7K
S3011
MR-R
PLAY
S.P
STILL
RVS
R3078 330
R3093 1K
R3094 1K
R3099 1K
R3001 1K
(FFWD) (REW) (PLAY) (REC)
(STILL) (PAUSE) (F-SEARCH) (R-SEARCH)
B0 (FWD S) (RESET)
B1 (REW S) (S P)
B2 (REEL S)
B3 (FL-2 SW) (A.MUTE)
VDD
(MR-H) (ML-F) (ML-R) (MC-D)
INT (REW.STOP) (MC-BR)
RES
TEST
Vss
(MH-ON) (MC-ON) (MR-F) (MR-R)
Xtal EXtal
D3025 MC921
S3007
PAUSE SW
A-MUTE
REC EE
REC
S.P
R3073 1K
R3074 4.7K
R3075 1K
R3113 330
D3031 MC921
Q3027 2SA1346
Q3026 2SC3399
D3033 GMA01
C3010 4.7µ/25
R3044 3.3K
4.5~5.5
R3043 2.2K
D3005 GMA01
R3042 22K
CF3001 CSB400P
R3045 1M
C3011 220P
C3012 220P
R3096 10K
D3003 MC911
5Vp-p 400KHz
C3022 47µ/50
R3090 33K
R3102 2.2K
R3091 18K
Q3025 DELAY 2SC536E,F
R3114 560
D3014 GMA01
C3019 1µ/50
R3098 68K
D3010 GMA01
D3034 GMA01
R3088 12K
R3047 10K
R3048 22K
R3092 1.2K
C3009 33µ/16
C3023 1µ/50
D3018 GMA01
IC3005 LOADING M54543L
5.6 1W R3058
IN1 IN2 OUT1 OUT2 GND
S3008
LOADING M
REEL M
R3086 3.3 1W
Q3013 2SC536E,F
IC3010
Q3018 2SA937Q,R LIMITER
R3059 10K
D3011 MC911
R3060 100K
R3054 560
R3053 22K
D3015 GMA01
R3046 22K
Q3015 2SA937Q,R LIMITER
R3049 2.2
Q3016 2SD325E,F LIMITER
Q3017 2SC536E,F LIMITER
D3007 GZA4.7Y
D3016 DS442
D3017 DS442
D3032 GMA01
IC3007
D3019 DS442
R3050 33K
R3051 33K
R3081 1K
IC3006 BA6209
FIN RIN Vcc2 Vcc1 VOUT1 VOUT2 GND VZ1 VZ2
C3017 NP 10µ/25
D3008 GZA75V RD7.5EB1
C3014 0.01
IC3010
R3117 15K
D3043 GMA01
D3044 GMA01
D3045 GMA01
CONTROL

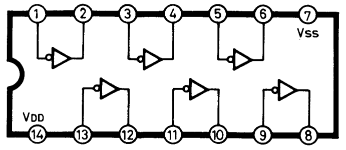
P.C.B. SV1-3 (SV1-8)


JW4952
JW4954
JW4951
JW4953
JW4955
JW4956
R4952 2.2K
R4953 270K
C4951 1µ/50
R4951 33K
C4952 0.068
R4955 2.2K
R4954 33K
D4952
D4951
R4956 47K
C4953 0.001
D4953
R4957 10K
R4958 47K
R4959 100K
R4960 47K
C4954 0.001
Q4951 2SC536
Q4952 2SC536
Q4953 2SC536
Q4955 2SC536
Q4954 2SC3399

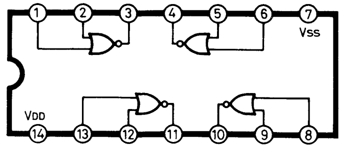
P.C.B. TB-1 TERMINAL BOARD CIRCUIT


SW8502
OFF
ON
JW8501
TEST +9V
REG +9V
GND
VIDEO OUT
GND
VIDEO IN
FTZ MUTE
AUDIO IN
SW8501
TUNER
EXT IN
VIDEO IN
JW8502
REMOTE
PB +9V
AUDIO IN
GND
AUDIO OUT
GND
R8501 3.3K
AUDIO OUT
JW8503
GND
VIDEO
GND
AUDIO
PLAY +9V
FTZ MUTE+9V
VIDEO OUT
REMOTE PAUSE

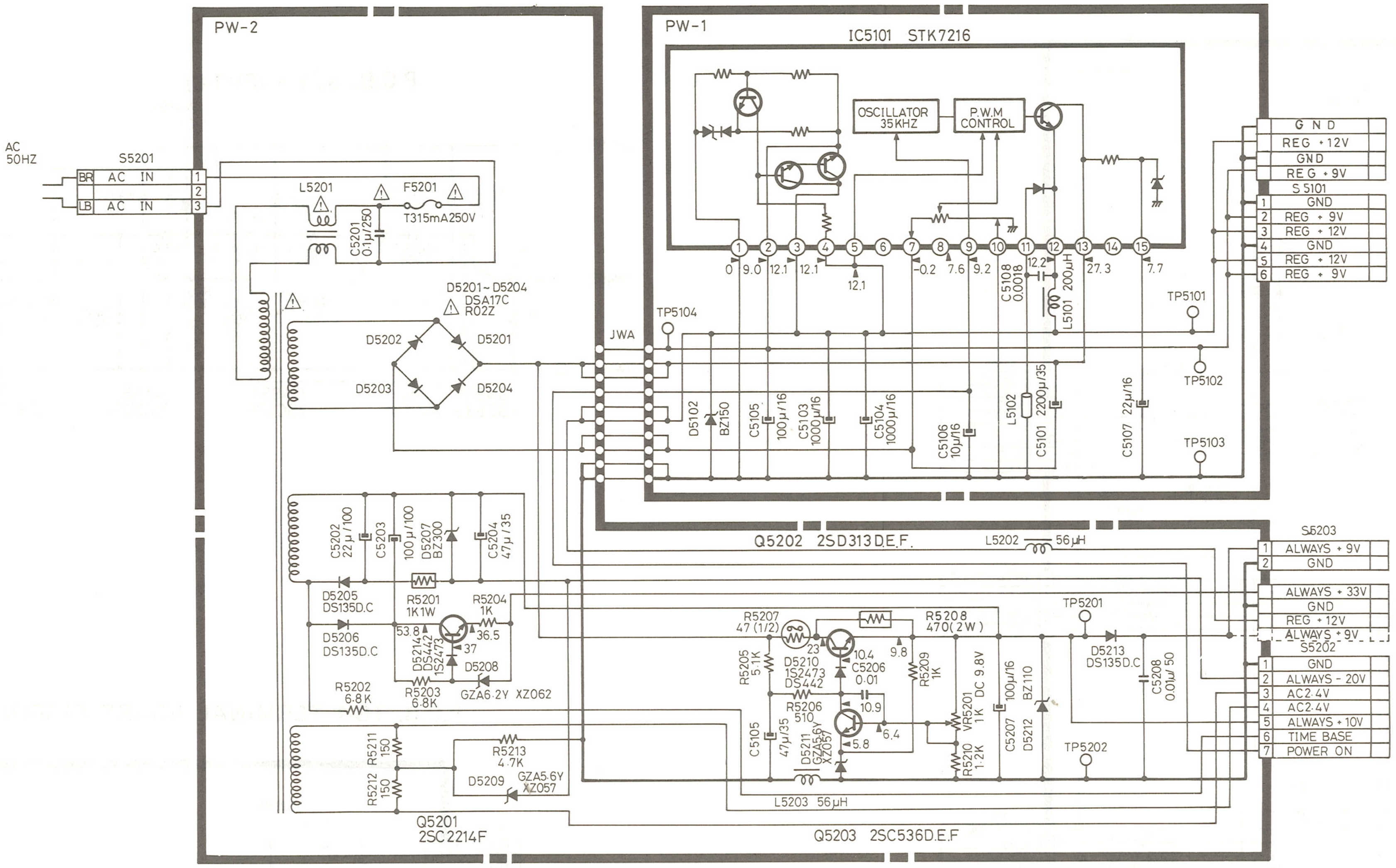
IC4008 TC4069UBP (µPD4069UBC)


Vss
VDD
①②③④⑤⑥⑦
⑭⑬⑫⑪⑩⑨⑧

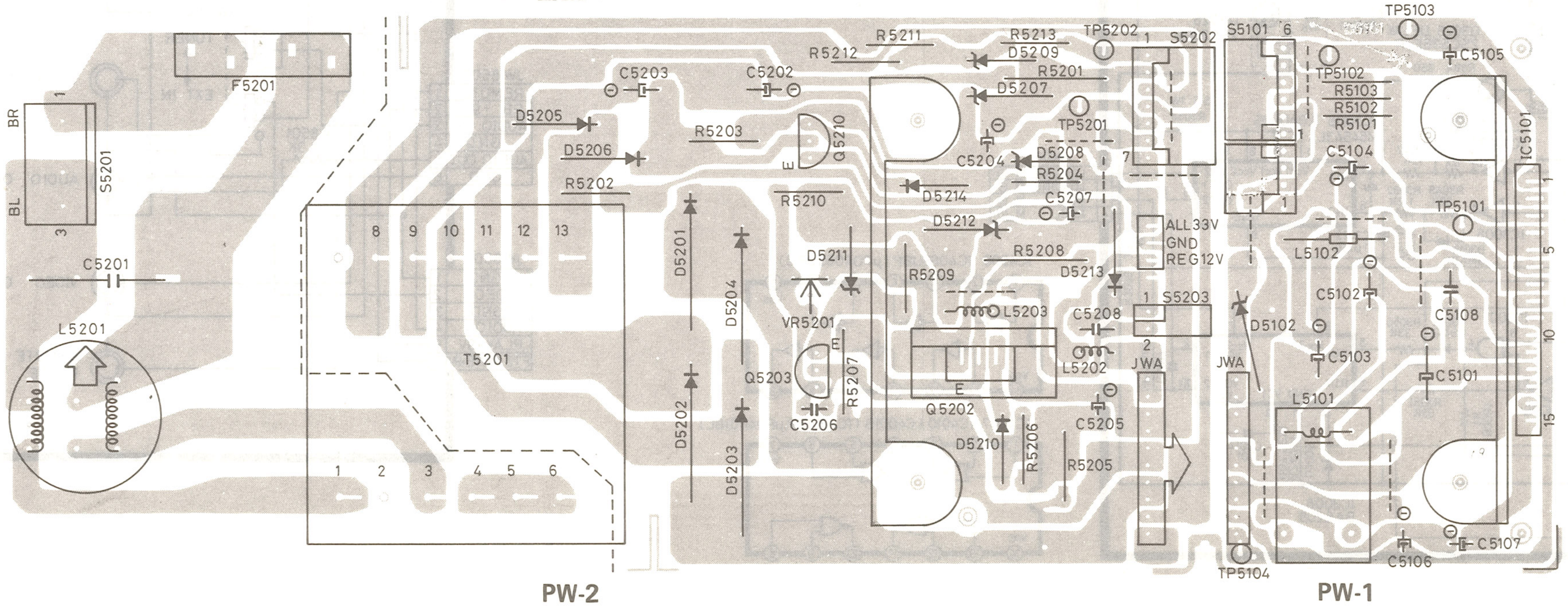
IC4007, IC4010 LC4001B (TC4001BP, µPD4001BC)


Vss
VDD
①②③④⑤⑥⑦
⑭⑬⑫⑪⑩⑨⑧

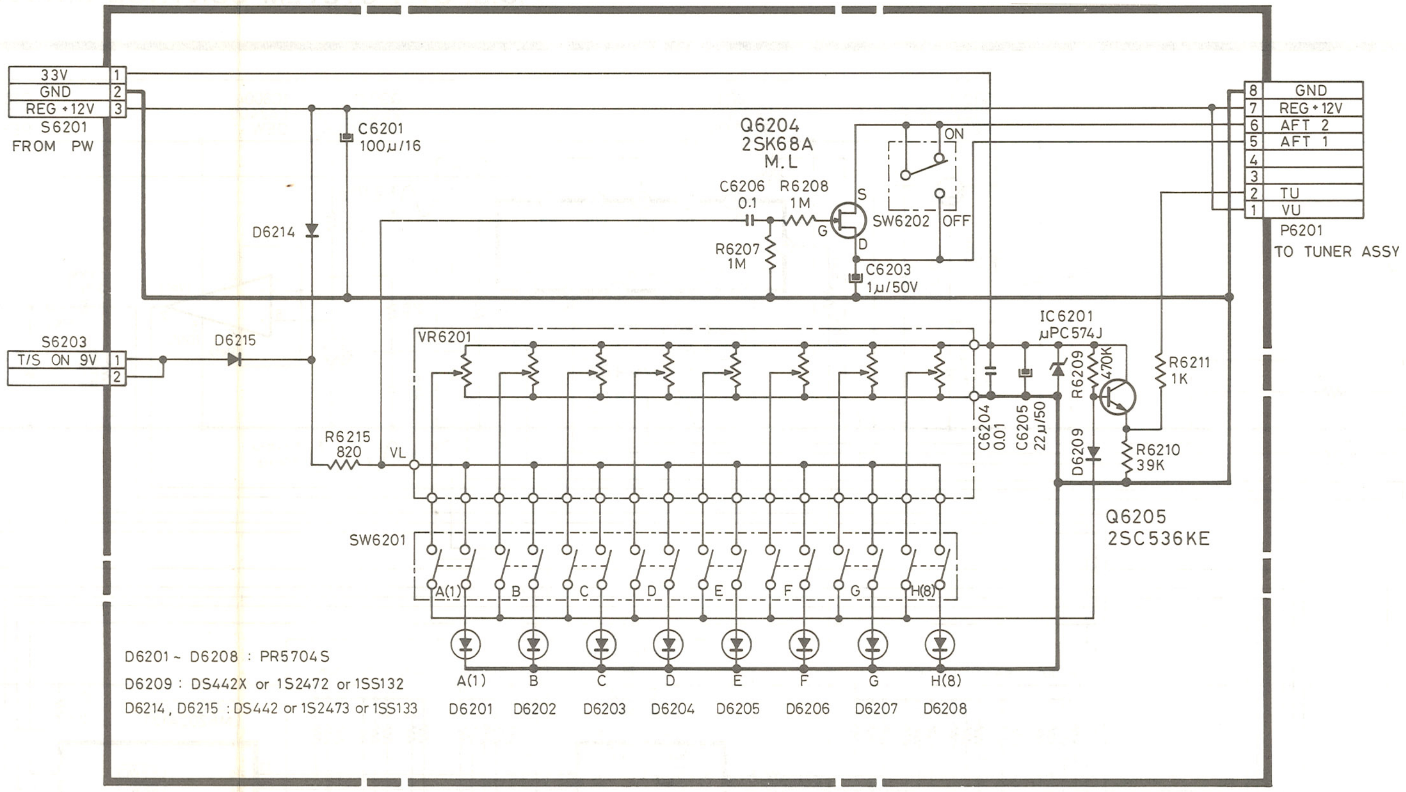
P.C.B. PW-1·2 POWER SUPPLY CIRCUIT


PW-2
PW-1
IC5101 STK7216
OSCILLATOR 35KHZ
P.W.M CONTROL
AC 50HZ
S5201
BR AC IN
LB AC IN
L5201
F5201
T315mA250V
C5201 0.1μ/250
D5201~D5204 DSA17C R02Z
D5202
D5201
D5203
D5204
JWA
TP5104
TP5101
TP5102
TP5103
0
9.0
12.1
12.1
12.1
-0.2
7.6
9.2
12.2
27.3
7.7
C5108 0.0018
L5101 200μH
D5102 BZ150
C5105
C5103 1000μ/16
C5104 1000μ/16
C5106 10μ/16
L5102
C5101 2200μ/35
C5107 22μ/16
GND
REG +12V
GND
REG +9V
S5101
1 GND
2 REG +9V
3 REG +12V
4 GND
5 REG +12V
6 REG +9V
C5202 22μ/100
C5203
100μ/100
D5207 BZ300
C5204 47μ/35
Q5202 2SD313D.E.F.
L5202 56μH
S5203
1 ALWAYS +9V
2 GND
ALWAYS +33V
GND
REG +12V
ALWAYS +9V
S5202
1 GND
2 ALWAYS -20V
3 AC2.4V
4 AC2.4V
5 ALWAYS +10V
6 TIME BASE
7 POWER ON
D5205 DS135D.C
R5201 1K1W
R5204 1K
D5206 DS135D.C
53.8
36.5
37
D5214 DS442 1S2473
D5208 GZA6.2Y XZ062
R5202 6.8K
R5203 6.8K
R5207 47(1/2)
R5208 470(2W)
TP5201
R5205 5.1K
23
10.4
9.8
D5210 1S2473 DS442
C5206 0.01
R5209 1K
DC 9.8V
D5213 DS135D.C
C5208 0.01μ/50
R5206 510
10.9
VR5201 1K
C5207 100μ/16
BZ110
D5212
C5105 47μ/35
D5211 GZA5.6Y XZ057
5.8
6.4
R5210 1.2K
TP5202
R5211 150
R5212 150
R5213 4.7K
D5209 GZA5.6Y XZ057
L5203 56μH
Q5201 2SC2214F
Q5203 2SC536D.E.F

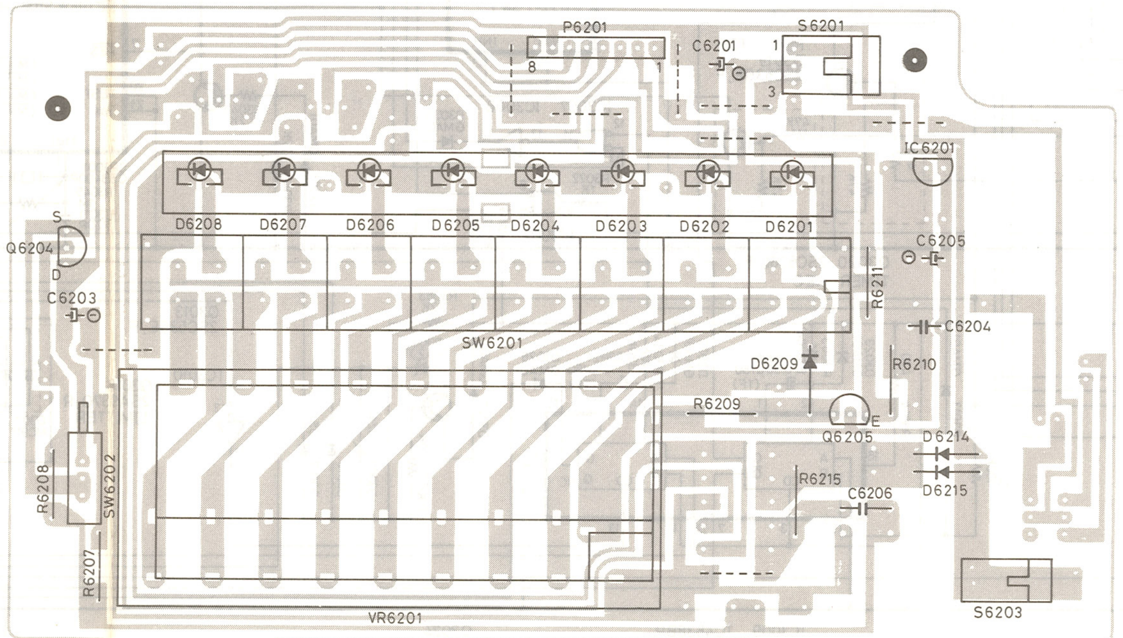
P.C.B. PW-1·2 POWER SUPPLY


F5201
BR
BL
S5201
1
3
C5201
L5201
C5203
C5202
D5205
D5206
R5203
R5202
Q5210
E
R5210
8 9 10 11 12 13
T5201
1 2 3 4 5 6
D5201
D5204
D5202
D5203
D5211
VR5201
Q5203
R5207
C5206
R5212
R5211
R5213
D5209
D5207
R5201
TP5202
S5202
TP5201
C5204
D5208
R5204
D5214
C5207
D5212
R5208
D5213
R5209
L5203
C5208
Q5202
L5202
D5210
R5206
R5205
C5205
ALL 33V
GND
REG12V
S5203
JWA
S5101
TP5103
C5105
TP5102
R5103
R5102
R5101
C5104
IC5101
TP5101
L5102
C5102
C5108
D5102
C5103
C5101
L5101
TP5104
C5106
C5107
PW-2
PW-1

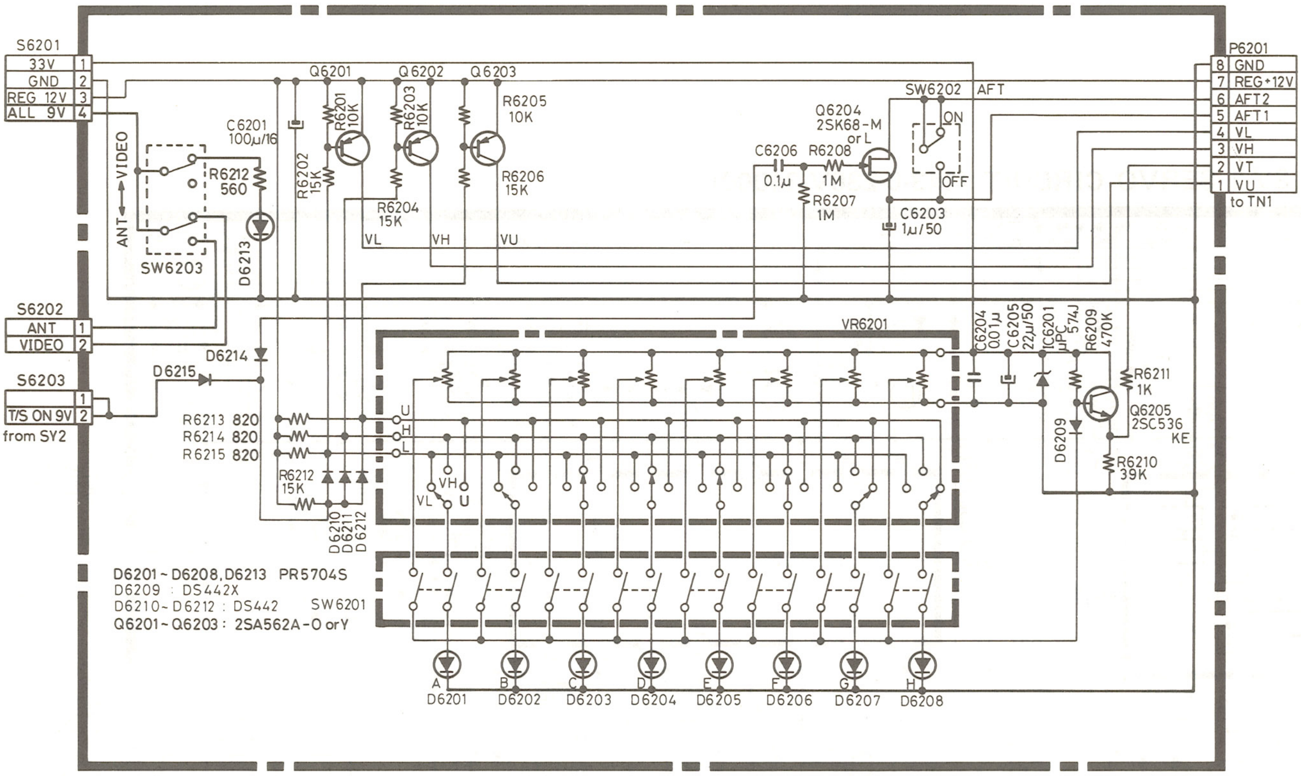
P.C.B. TN-2 CHANNEL PRE-SET/SELECT CIRCUIT (U.K., H.K.)


33V
GND
REG +12V
S6201
FROM PW
C6201
100μ/16
D6214
Q6204
2SK68A
M.L
C6206
0.1
R6208
1M
S
G
D
R6207
1M
SW6202
ON
OFF
C6203
1μ/50V
8 GND
7 REG +12V
6 AFT 2
5 AFT 1
4
3
2 TU
1 VU
P6201
TO TUNER ASSY
S6203
T/S ON 9V
D6215
VR6201
IC6201
μPC574J
R6209
470K
R6211
1K
C6204
0.01
C6205
22μ/50
D6209
R6210
39K
R6215
820
VL
Q6205
2SC536KE
SW6201
A(1)
B
C
D
E
F
G
H(8)
D6201~ D6208 : PR5704S
D6209 : DS442X or 1S2472 or 1SS132
D6214, D6215 : DS442 or 1S2473 or 1SS133
D6201
D6202
D6203
D6204
D6205
D6206
D6207
D6208

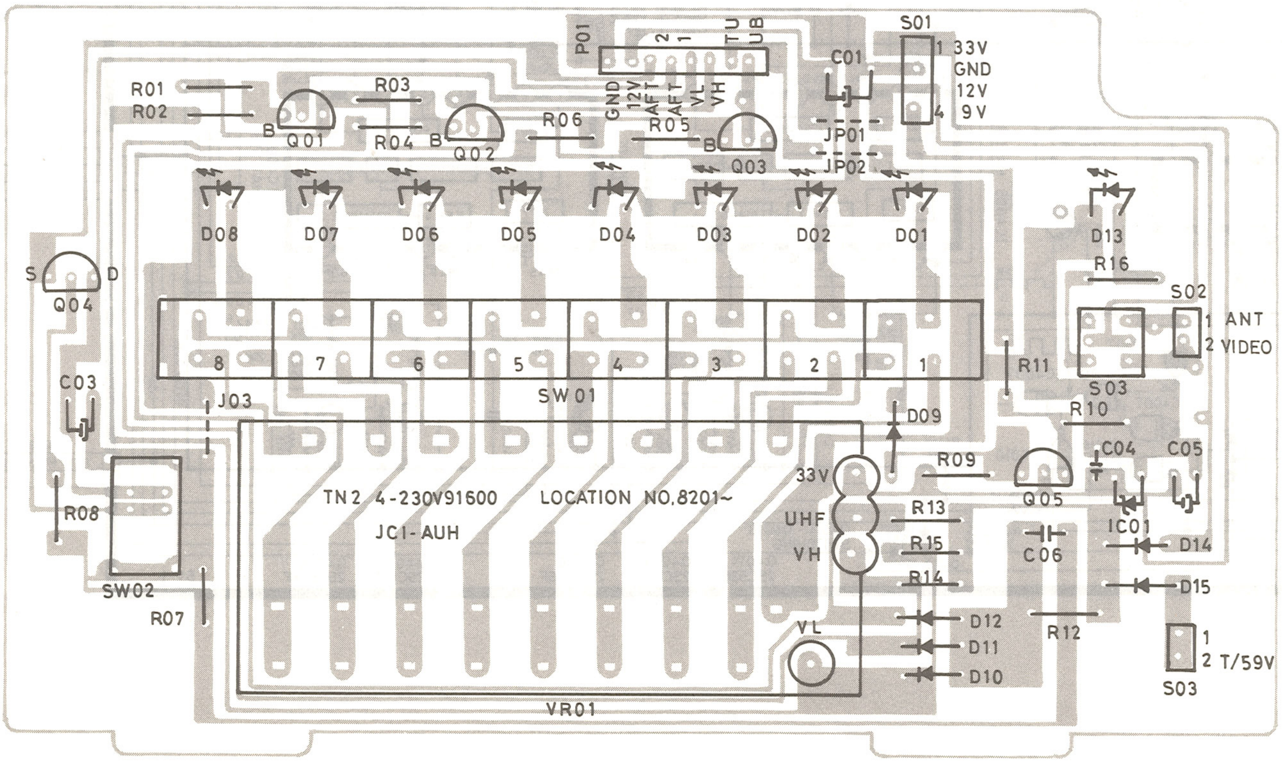
P.C.B. TN-2 CHANNEL PRE-SET/SELECT (U.K., H.K.)


P6201
8
1
C6201
S6201
1
3
IC6201
D6208
D6207
D6206
D6205
D6204
D6203
D6202
D6201
S
Q6204
D
C6203
C6205
R6211
C6204
SW6201
D6209
R6210
R6209
Q6205
E
D6214
D6215
R6215
C6206
R6208
SW6202
R6207
VR6201
S6203

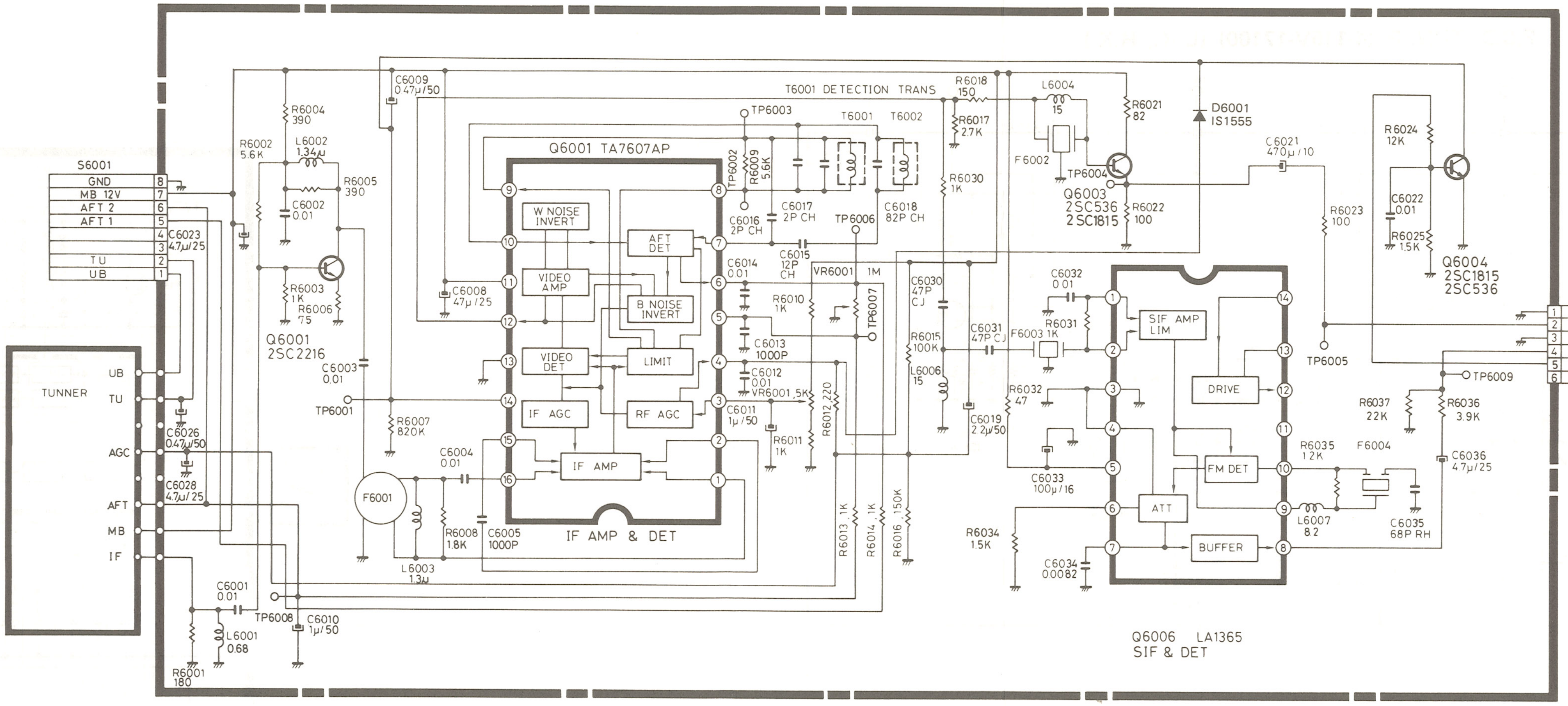
P.C.B. TN-2 CH PRE-SET/SELECT (New Zealand)


S6201
1 33V
2 GND
3 REG 12V
4 ALL 9V
Q6201
Q6202
Q6203
C6201 100μ/16
R6201 10K
R6203 10K
R6205 10K
R6202 15K
R6204 15K
R6206 15K
R6212 560
ANT ↔ VIDEO
SW6203
D6213
VL
VH
VU
Q6204 2SK68-M or L
SW6202 AFT
ON
OFF
C6206 0.1μ
R6208 1M
R6207 1M
C6203 1μ/50
P6201
8 GND
7 REG+12V
6 AFT2
5 AFT1
4 VL
3 VH
2 VT
1 VU
to TN1
S6202
1 ANT
2 VIDEO
S6203
1
2 T/S ON 9V
from SY2
D6214
D6215
VR6201
C6204 0.01μ
C6205 22μ/50
IC6201 μPC 574J
R6209 470K
R6211 1K
Q6205 2SC536 KE
D6209
R6210 39K
R6213 820
R6214 820
R6215 820
R6212 15K
U
H
L
VH
VL
U
D6210
D6211
D6212
D6201～D6208, D6213 PR5704S
D6209 : DS442X
D6210～D6212 : DS442
Q6201～Q6203 : 2SA562A-O or Y
SW6201
A
B
C
D
E
F
G
H
D6201
D6202
D6203
D6204
D6205
D6206
D6207
D6208

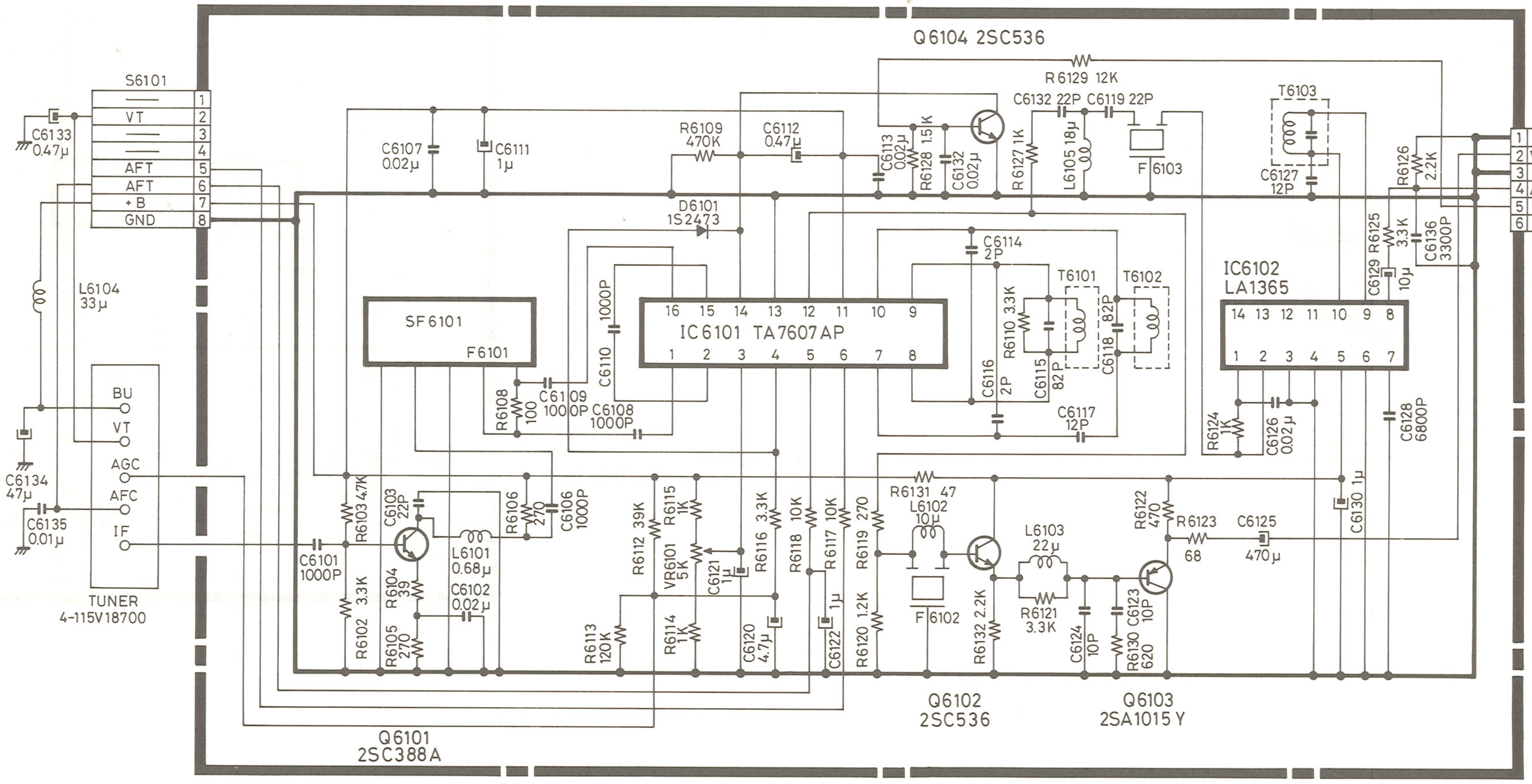
P.C.B. TN-2 CH PRE-SET/SELECT (New Zealand)


P01
GND
12V
AFT 2
AFT 1
VL
VH
TU
UB
S01
1 33V
GND
12V
4 9V
C01
JP01
JP02
R01
R02
R03
R04
R05
R06
B
Q01
Q02
Q03
D08
D07
D06
D05
D04
D03
D02
D01
D13
R16
S
D
Q04
S02
1 ANT
2 VIDEO
S03
8
7
6
5
4
3
2
1
SW01
R11
C03
J03
D09
R10
C04
C05
33V
R09
TN2 4-230V91600
LOCATION NO.8201~
JC1-AUH
Q05
UHF
R13
IC01
R08
VH
R15
C06
D14
R14
D15
SW02
D12
R12
R07
VL
D11
1
2 T/59V
D10
S03
VR01

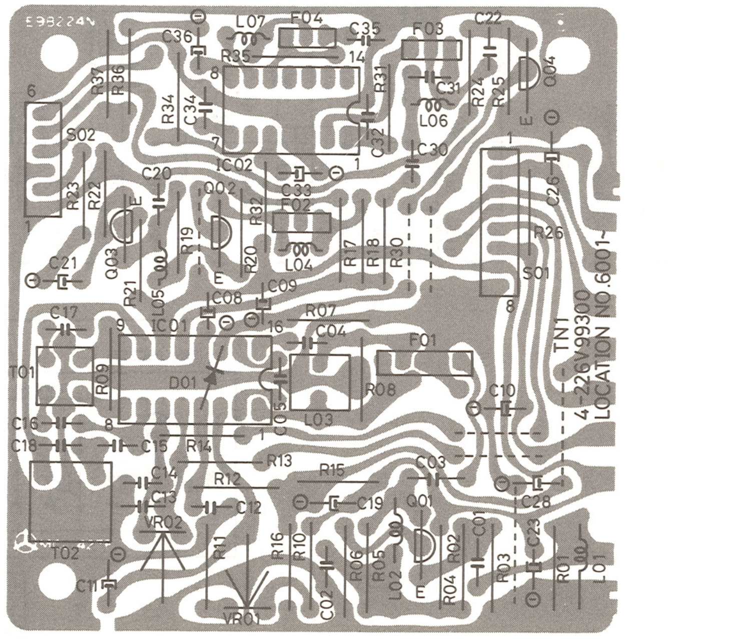
P.C.B. TN-1 TUNER I-F CIRCUIT (143-9-0600-07800) (U.K., H.K.)


S6001
GND
MB 12V
AFT 2
AFT 1
TU
UB
TUNNER
UB
TU
AGC
AFT
MB
IF
C6023 47μ/25
C6026 0.47μ/50
C6028 47μ/25
C6001 0.01
TP6008
C6010 1μ/50
L6001 0.68
R6001 180
R6002 5.6K
R6004 390
L6002 1.34μ
R6005 390
C6002 0.01
R6003 1K
R6006 75
Q6001 2SC2216
C6003 0.01
TP6001
R6007 820K
F6001
C6004 0.01
R6008 1.8K
C6005 1000P
L6003 1.3μ
C6009 0.47μ/50
C6008 47μ/25
Q6001 TA7607AP
W NOISE INVERT
VIDEO AMP
VIDEO DET
IF AGC
B NOISE INVERT
AFT DET
LIMIT
RF AGC
IF AMP
IF AMP & DET
TP6003
TP6002
R6009 5.6K
C6016 2P CH
C6017 2P CH
T6001 DETECTION TRANS
T6001
T6002
C6018 82P CH
TP6006
C6015 12P CH
C6014 0.01
R6010 1K
VR6001 1M
TP6007
C6013 1000P
C6012 0.01
VR6001 5K
R6012 220
C6011 1μ/50
R6011 1K
R6013 1K
R6014 1K
R6016 150K
R6018 150
R6017 27K
L6004 15
F6002
TP6004
R6021 82
D6001 IS1555
Q6003 2SC536 2SC1815
R6022 100
R6030 1K
C6030 47P CJ
R6015 100K
L6006 15
C6031 47P CJ
F6003 1K
R6031
C6032 0.01
R6032 47
C6019 2.2μ/50
C6033 100μ/16
R6034 1.5K
C6034 0.0082
SIF AMP LIM
DRIVE
FM DET
ATT
BUFFER
L6007 8.2
Q6006 LA1365 SIF & DET
C6021 470μ/10
R6023 100
TP6005
R6024 12K
C6022 0.01
R6025 1.5K
Q6004 2SC1815 2SC536
R6035 12K
F6004
C6035 68P RH
R6037 22K
R6036 3.9K
TP6009
C6036 47μ/25
S6001
GND
VIDEO OUT
GND
AUDIO OUT
PB 9V

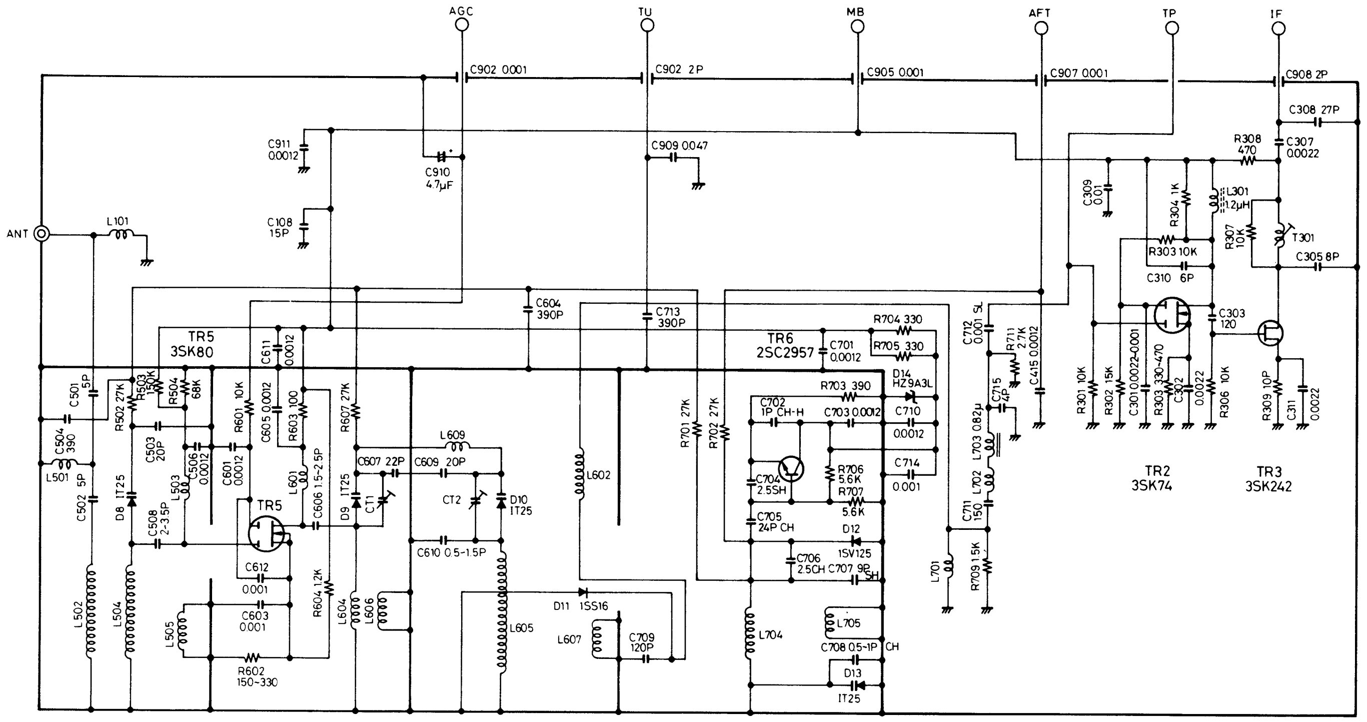
P.C.B. TN-1 TUNER I-F CIRCUIT (143-0-230V-19800) (U.K., H.K.)


S6101
VT
AFT
AFT
+B
GND
C6133 0.47μ
L6104 33μ
C6134 47μ
C6135 0.01μ
BU
VT
AGC
AFC
IF
TUNER 4-115V18700
Q6104 2SC536
R6129 12K
C6107 0.02μ
C6111 1μ
R6109 470K
C6112 0.47μ
D6101 1S2473
C6113 0.02μ
R6128 1.5K
C6132 0.02μ
R6127 1K
C6132 22P
C6119 22P
L6105 18μ
F6103
T6103
C6127 12P
R6126 2.2K
S6102
GND
VIDEO OUT
GND
AUDIO OUT
MUTE
SF6101
F6101
IC6101 TA7607AP
C6110 1000P
C6109 1000P
C6108 1000P
R6108 100
C6114 2P
C6116 2P
R6110 3.3K
C6115 82P
T6101
C6118 82P
T6102
C6117 12P
IC6102 LA1365
R6125 3.3K
C6129 10μ
C6136 3300P
R6124 1K
C6126 0.02μ
C6128 6800P
C6130 1μ
C6101 1000P
R6103 47K
C6103 22P
L6101 0.68μ
C6102 0.02μ
R6106 270
C6106 1000P
R6102 3.3K
R6104 39
R6105 270
R6112 39K
VR6101 5K
R6115 1K
C6121 1μ
R6116 3.3K
R6118 10K
R6117 10K
R6119 270
R6113 120K
R6114 1K
C6120 4.7μ
C6122 1μ
R6120 12K
R6131 47
L6102 10μ
F6102
R6132 2.2K
L6103 22μ
R6121 3.3K
C6124 10P
R6122 470
R6123 68
C6125 470μ
C6123 10P
R6130 620
Q6101 2SC388A
Q6102 2SC536
Q6103 2SA1015Y

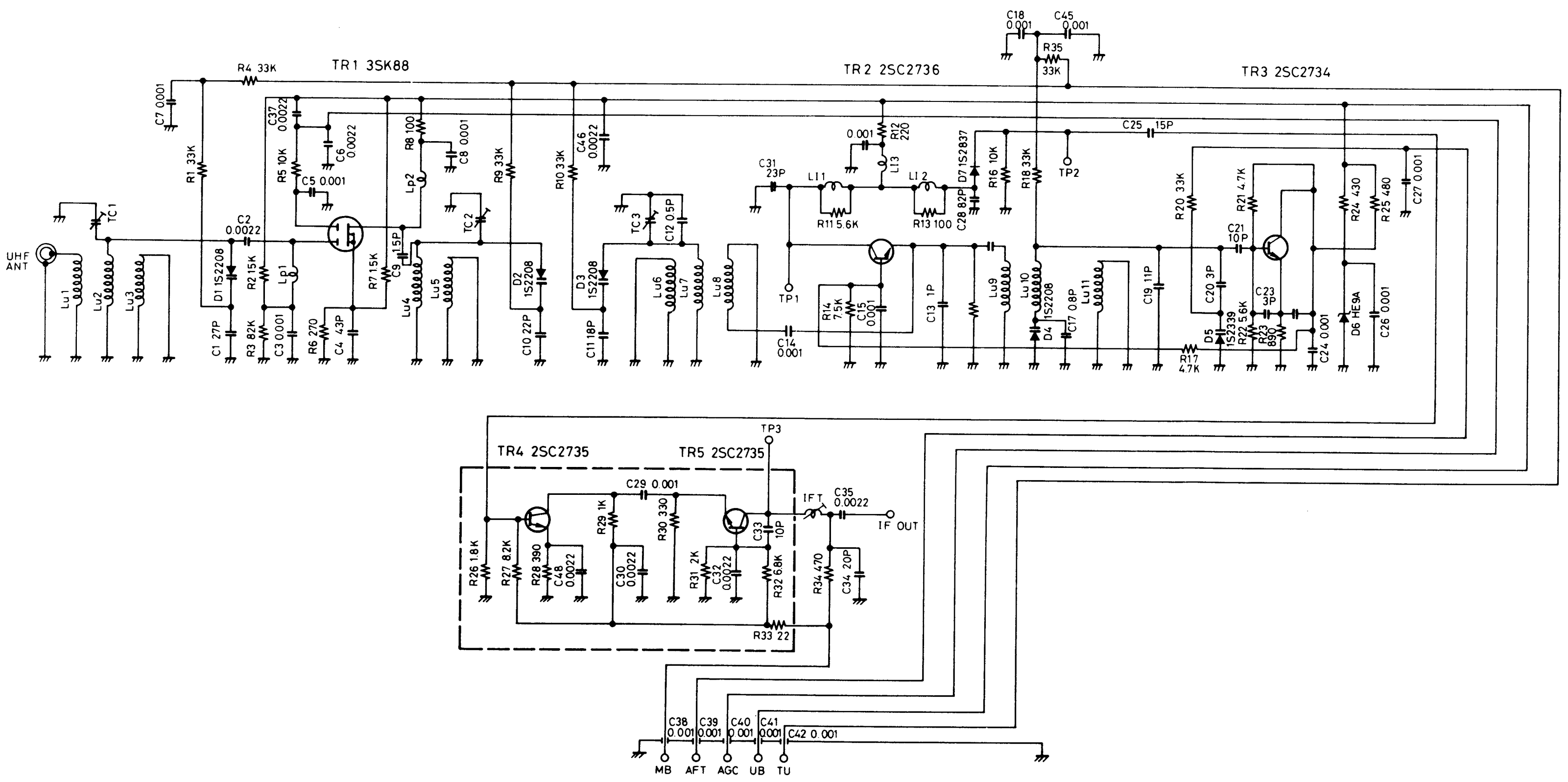
P.C.B. TN-1 TUNER I-F (143-9-0600-07800) (U.K., H.K.)


TN1
4-226V99300
LOCATION NO. 6001~
S02
S01
IC01
IC02
T01
T02
VR01
VR02
D01
F01
F03
F04
Q01
Q02
Q03
Q04
L03
L04
L05
L06
L07

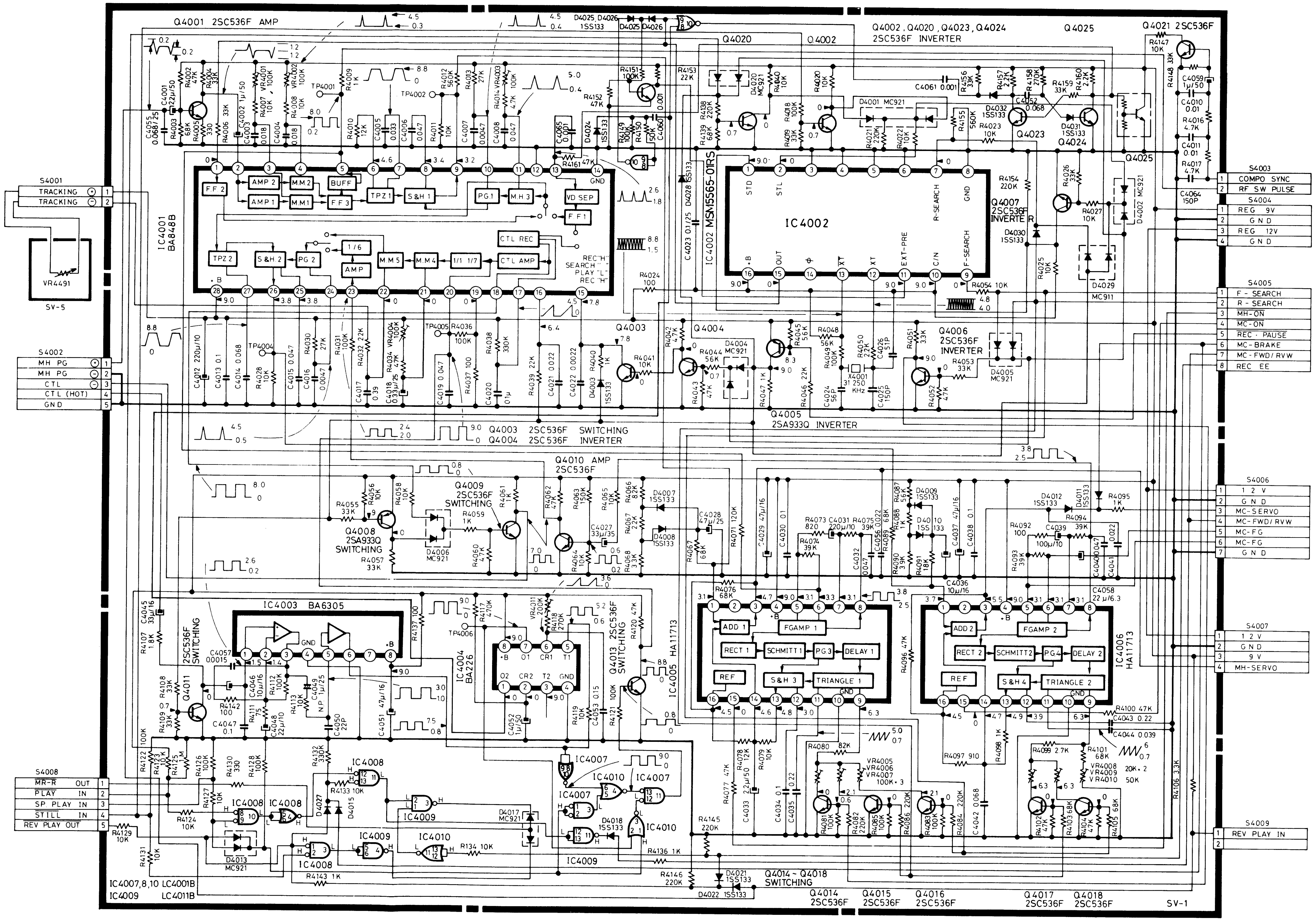
P.C.B. TUNER (4-115V-17100) (U.K., H.K.)


AGC
TU
MB
AFT
TP
IF
ANT
C902 0.001
C902 2P
C905 0.001
C907 0.001
C908 2P
C308 27P
C911 0.0012
C910 4.7μF
C909 0.047
C108 15P
L101
TR5 3SK80
TR6 2SC2957
TR2 3SK74
TR3 3SK242
C604 390P
C713 390P
R704 330
R705 330
C701 0.0012
R703 390
D14 HZ9A3L
R308 470
C307 0.0022
L301 12μH
T301
R303 10K
C310 6P
C305 8P
C303 120
L602
L605
L607
D11 1SS16
C709 120P
L704
L705
D13 1T25
L701

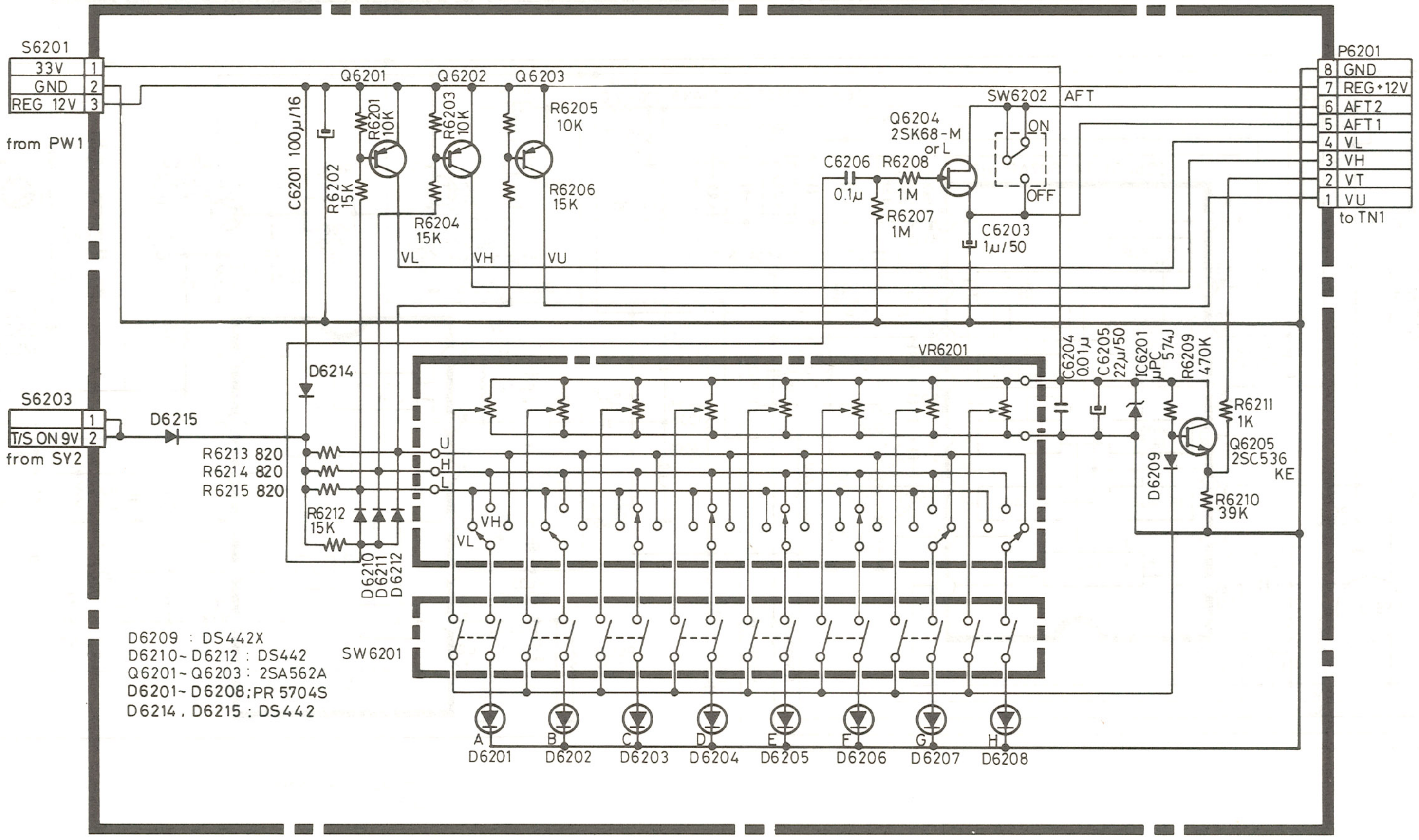
P.C.B. TUNER (4-115V-17600) (U.K., H.K.)


UHF ANT
TR1 3SK88
TR2 2SC2736
TR3 2SC2734
TR4 2SC2735
TR5 2SC2735
R4 33K
C7 0.001
C18 0.001
C45 0.001
R35 33K
C25 15P
TC1
TC2
TC3
TP1
TP2
TP3
IFT
C35 0.0022
IF OUT
C29 0.001
R33 22
C38 0.001
C39 0.001
C40 0.001
C41 0.001
C42 0.001
MB
AFT
AGC
UB
TU

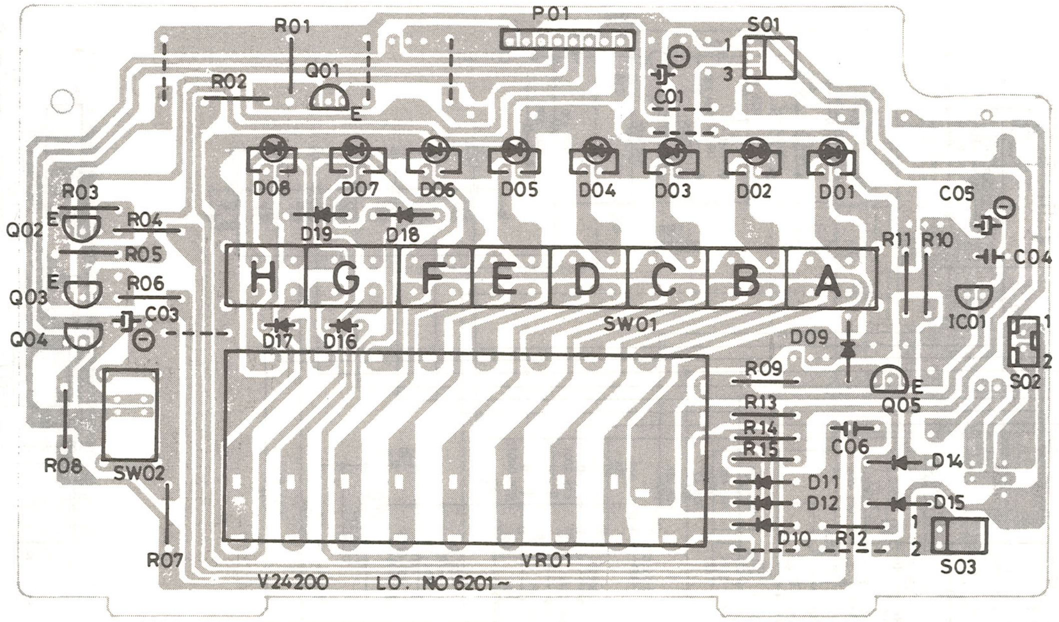
P.C.B. SV-1 SERVO CIRCUIT (143-0-230V-34000)


Q4001 2SC536F AMP
Q4002, Q4020, Q4023, Q4024 2SC536F INVERTER
Q4025
Q4021 2SC536F
Q4020
Q4002
Q4023
Q4024
Q4007 2SC536F INVERTER
IC4001 BA848B
IC4002 MSM5565-01RS
S4001
TRACKING ⊕
TRACKING ⊖
VR4491
SV-5
S4002
MH PG ⊕
MH PG ⊖
CTL ⊖
CTL (HOT)
GND
S4003
COMPO SYNC
RF SW PULSE
S4004
REG 9V
GND
REG 12V
GND
S4005
F-SEARCH
R-SEARCH
MH-ON
MC-ON
REC-PAUSE
MC-BRAKE
MC-FWD/RVW
REC EE
Q4003
Q4004
Q4006 2SC536F INVERTER
Q4005 2SA933Q INVERTER
Q4003 2SC536F SWITCHING
Q4004 2SC536F INVERTER
Q4010 AMP 2SC536F
Q4009 2SC536F SWITCHING
Q4008 2SA933Q SWITCHING
S4006
12 V
GND
MC-SERVO
MC-FWD/RVW
MC-FG
MC-FG
GND
S4007
12 V
GND
9 V
MH-SERVO
IC4003 BA6305
IC4004 BA226
Q4011 2SC536F SWITCHING
Q4013 2SC536F SWITCHING
IC4005 HA11713
IC4006 HA11713
S4008
MR-R OUT
PLAY IN
SP PLAY IN
STILL IN
REV PLAY OUT
S4009
REV PLAY IN
IC4007
IC4008
IC4009
IC4010
Q4014~Q4018 SWITCHING
Q4014 2SC536F
Q4015 2SC536F
Q4016 2SC536F
Q4017 2SC536F
Q4018 2SC536F
IC4007,8,10 LC4001B
IC4009 LC4011B
SV-1

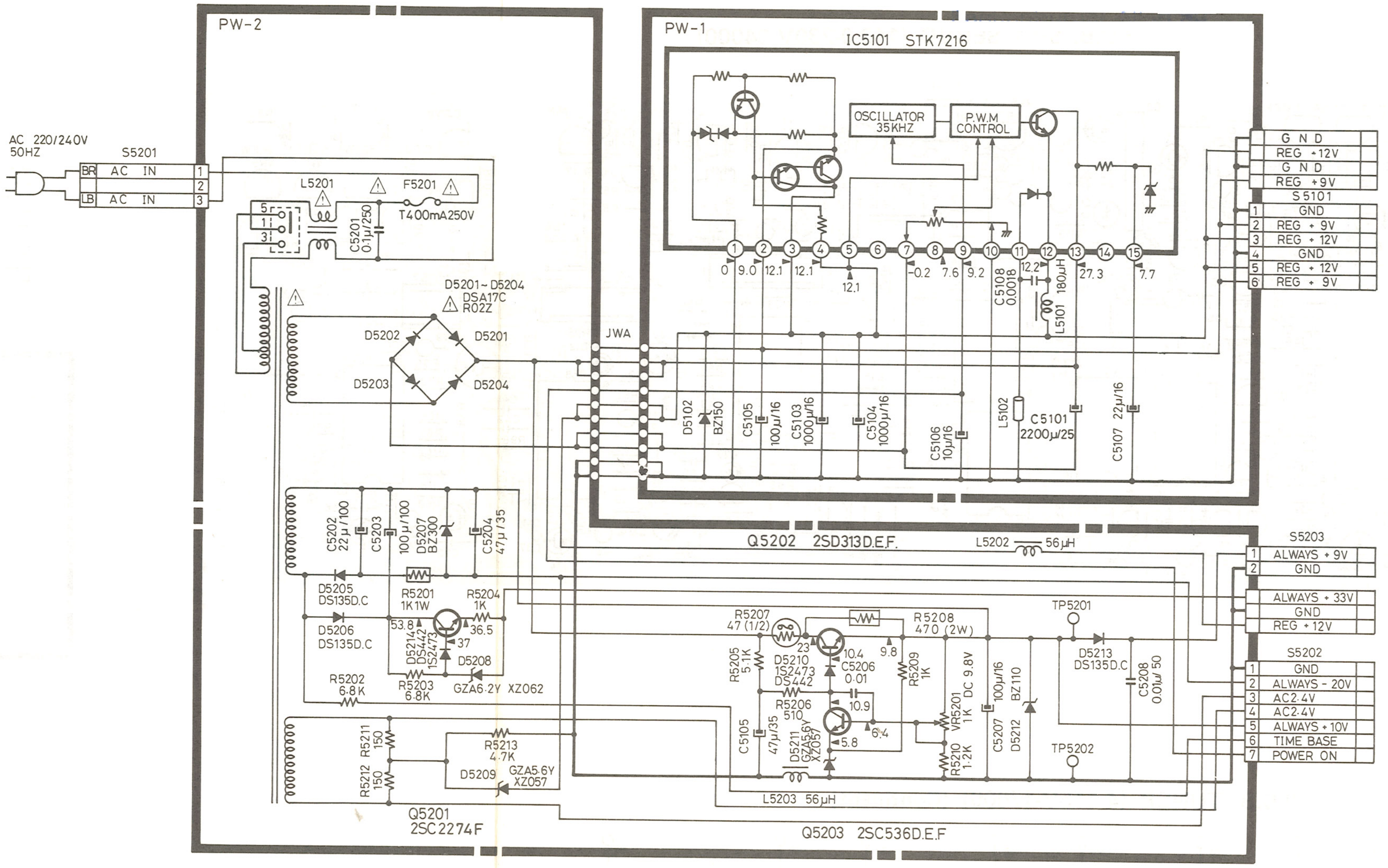
P.C.B. TN-2 CHANNEL PRE-SET/SELECT CIRCUIT (Continent)


S6201
33V 1
GND 2
REG 12V 3
from PW1
Q6201
Q6202
Q6203
C6201 100µ/16
R6201 10K
R6202 15K
R6203 10K
R6204 15K
R6205 10K
R6206 15K
VL
VH
VU
Q6204 2SK68-M or L
C6206 0.1µ
R6208 1M
R6207 1M
C6203 1µ/50
SW6202 AFT
ON
OFF
P6201
8 GND
7 REG+12V
6 AFT2
5 AFT1
4 VL
3 VH
2 VT
1 VU
to TN1
S6203
T/S ON 9V 2
from SY2
D6215
D6214
R6213 820
R6214 820
R6215 820
R6212 15K
D6210
D6211
D6212
U
H
L
VH
VL
VR6201
C6204 0.01µ
C6205 22µ/50
IC6201 µPC 574J
R6209 470K
R6211 1K
Q6205 2SC536 KE
D6209
R6210 39K
SW6201
D6209 : DS442X
D6210~D6212 : DS442
Q6201~Q6203 : 2SA562A
D6201~D6208;PR 5704S
D6214 , D6215 : DS442
A
B
C
D
E
F
G
H
D6201
D6202
D6203
D6204
D6205
D6206
D6207
D6208

P.C.B. TN-2 CHANNEL PRE-SET SELECT (Continent)

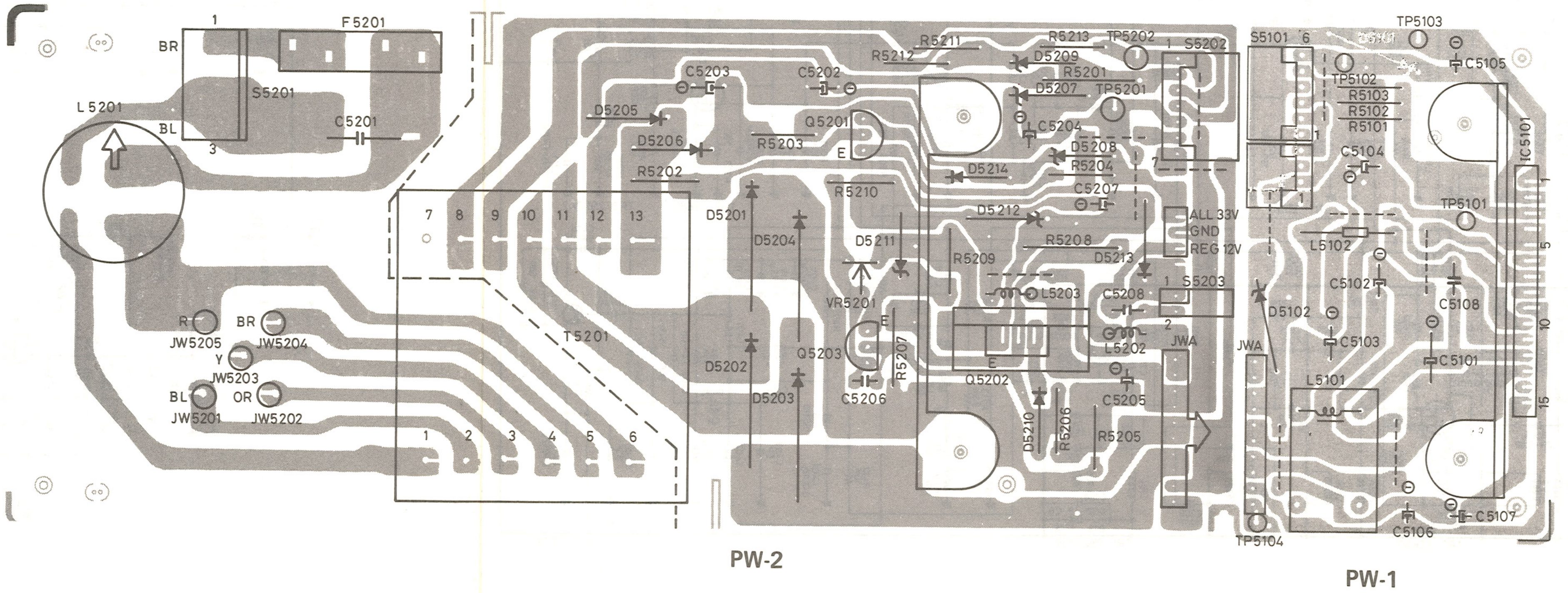

P01
S01
R01
R02
Q01
E
C01
1
3
D08
D07
D06
D05
D04
D03
D02
D01
C05
C04
R03
Q02
R04
R05
D19
D18
R11
R10
Q03
R06
H
G
F
E
D
C
B
A
IC01
Q04
C03
SW01
D17
D16
D09
S02
1
2
R09
Q05
R13
R14
R15
C06
D14
D11
D12
D15
D10
R12
S03
R08
SW02
R07
VR01
V24200
LO. NO 6201~

P.C.B. PW-1 · 2 (South Africa)



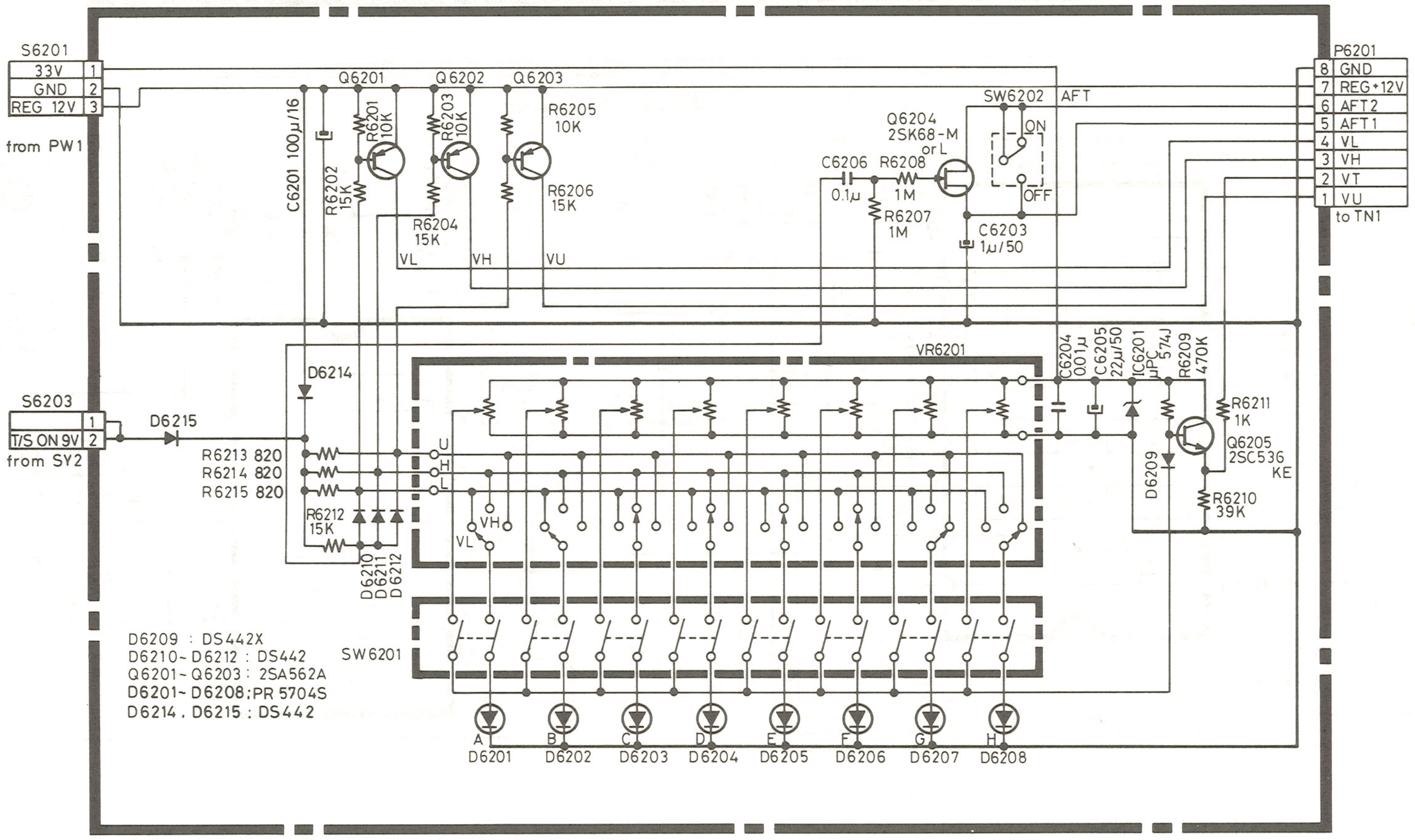
PW-2
PW-1
IC5101 STK7216
OSCILLATOR 35KHZ
P.W.M CONTROL
AC 220/240V 50HZ
S5201
BR AC IN
LB AC IN
L5201
F5201
T400mA250V
C5201 0.1μ/250
D5201~D5204 DSA17C R02Z
D5202
D5201
D5203
D5204
JWA
D5102 BZ150
C5105 100μ/16
C5103 1000μ/16
C5104 1000μ/16
C5106 10μ/16
L5102
C5101 2200μ/25
C5107 22μ/16
C5108 0.0018
L5101 180μH
G N D
REG +12V
G N D
REG +9V
S5101
GND
REG +9V
REG +12V
GND
REG +12V
REG +9V
C5202 22μ/100
C5203 100μ/100
D5207 BZ300
C5204 47μ/35
D5205 DS135D.C
D5206 DS135D.C
R5201 1K1W
R5204 1K
D5214 DS442 1S2473
D5208
GZA6.2Y XZ062
R5202 6.8K
R5203 6.8K
Q5202 2SD313D.E.F.
L5202 56μH
S5203
ALWAYS +9V
GND
ALWAYS +33V
GND
REG +12V
S5202
GND
ALWAYS -20V
AC2.4V
AC2.4V
ALWAYS +10V
TIME BASE
POWER ON
R5207 47 (1/2)
R5208 470 (2W)
TP5201
D5213 DS135D.C
C5208 0.01μ/50
R5205 5.1K
D5210 1S2473 DS442
C5206 0.01
R5209 1K
R5206 510
VR5201 1K
DC 9.8V
C5207 100μ/16
BZ110
D5212
TP5202
C5105 47μ/35
D5211 GZA5.6Y XZ057
R5210 1.2K
L5203 56μH
R5211 150
R5212 150
R5213 4.7K
D5209
GZA5.6Y XZ057
Q5201 2SC2274F
Q5203 2SC536D.E.F

P.C.B. PW-1 · 2 POWER SUPPLY (South Africa)



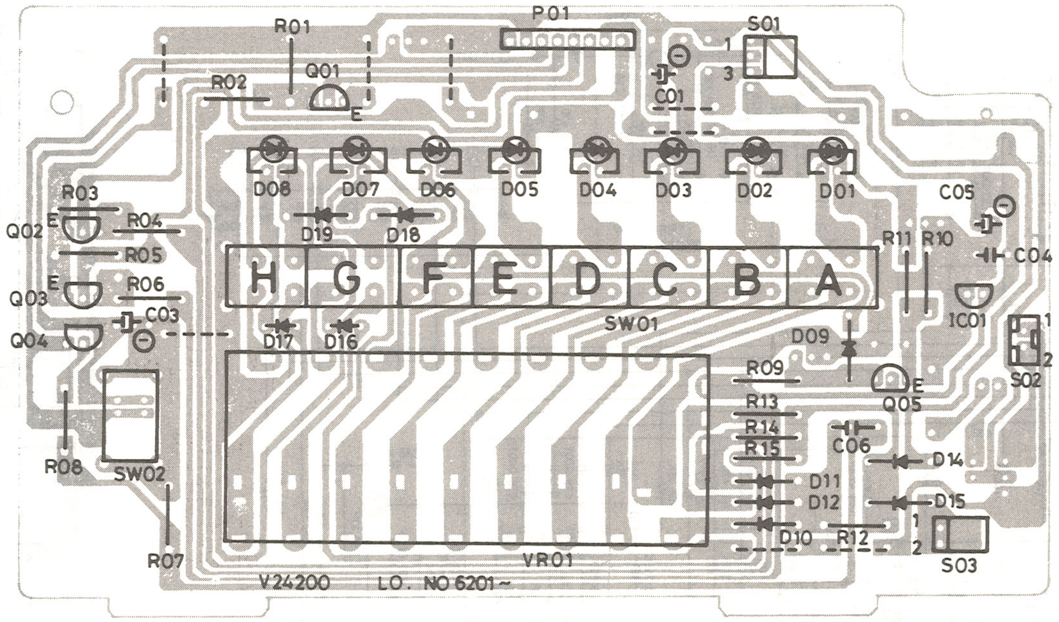
F5201
BR
S5201
BL
L5201
C5201
JW5205
JW5204
JW5203
JW5201
JW5202
T5201
D5201
D5202
D5203
D5204
D5205
D5206
C5203
C5202
Q5201
R5203
R5202
R5210
R5212
R5211
R5213
TP5202
S5202
D5209
R5201
D5207
TP5201
C5204
D5208
R5204
D5214
C5207
D5212
R5208
D5213
R5209
D5211
VR5201
L5203
C5208
S5203
ALL 33V
GND
REG 12V
L5202
Q5203
Q5202
C5206
R5207
D5210
R6206
R5205
C5205
JWA
S5101
TP5103
TP5102
C5105
R5103
R5102
R5101
C5104
IC5101
TP5101
L5102
C5102
C5108
D5102
C5103
C5101
L5101
C5106
C5107
TP5104
PW-2
PW-1

P.C.B. TN-2 CHANNEL PRE-SET/SELECT CIRCUIT (Continent)

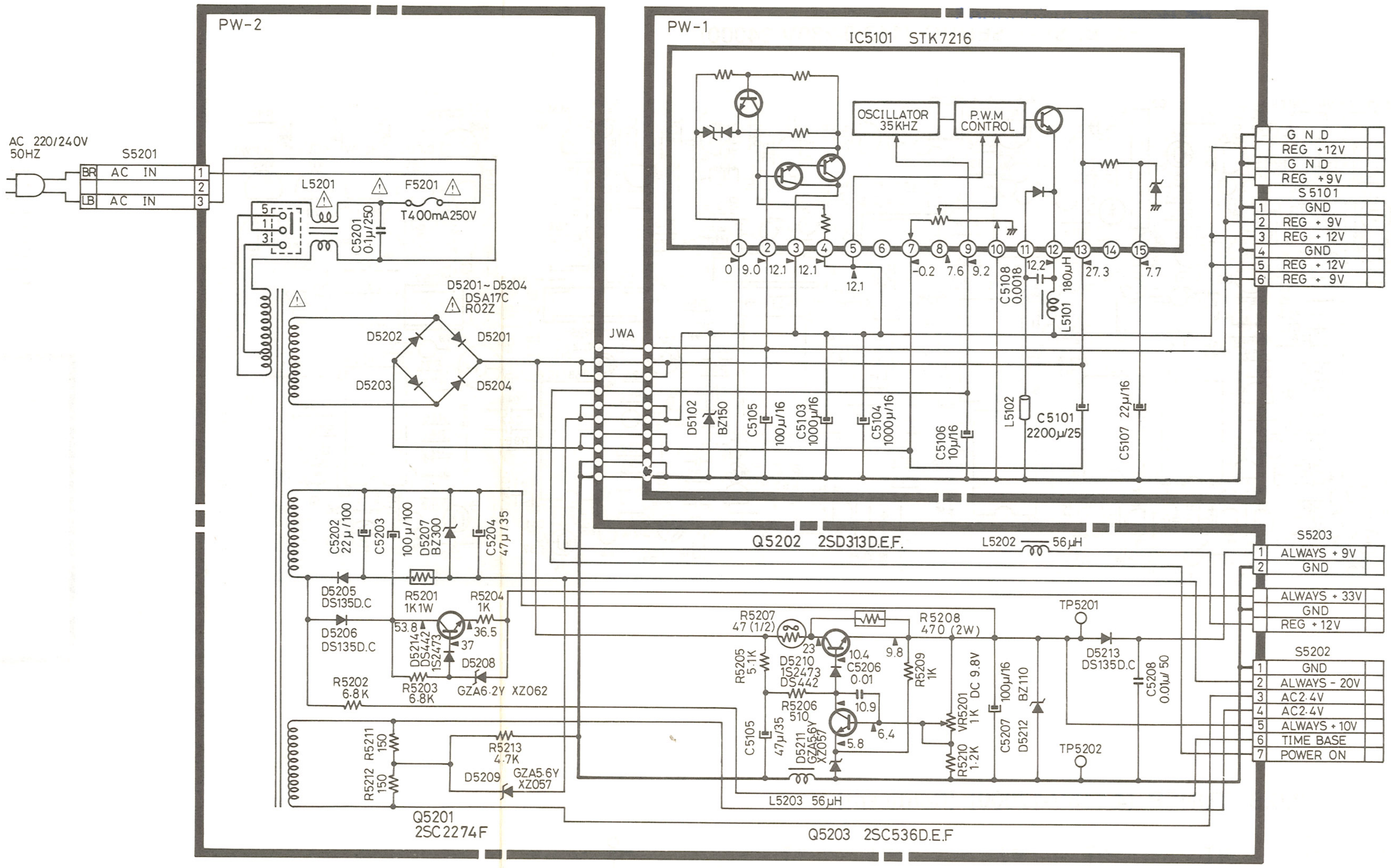

S6201
33V 1
GND 2
REG 12V 3
from PW1
Q6201
Q6202
Q6203
C6201 100μ/16
R6202 15K
R6201 10K
R6203 10K
R6204 15K
R6205 10K
R6206 15K
VL
VH
VU
Q6204 2SK68-M or L
C6206 0.1μ
R6208 1M
R6207 1M
C6203 1μ/50
SW6202
AFT
ON
OFF
P6201
8 GND
7 REG+12V
6 AFT2
5 AFT1
4 VL
3 VH
2 VT
1 VU
to TN1
S6203
1
T/S ON 9V 2
from SY2
D6215
D6214
R6213 820
R6214 820
R6215 820
R6212 15K
D6210
D6211
D6212
U
H
L
VH
VL
VR6201
C6204 0.01μ
C6205 22μ/50
IC6201 μPC 574J
R6209 470K
R6211 1K
Q6205 2SC536 KE
D6209
R6210 39K
SW6201
A D6201
B D6202
C D6203
D D6204
E D6205
F D6206
G D6207
H D6208

D6209 : DS442X
D6210~D6212 : DS442
Q6201~Q6203 : 2SA562A
D6201~D6208;PR 5704S
D6214 . D6215 : DS442

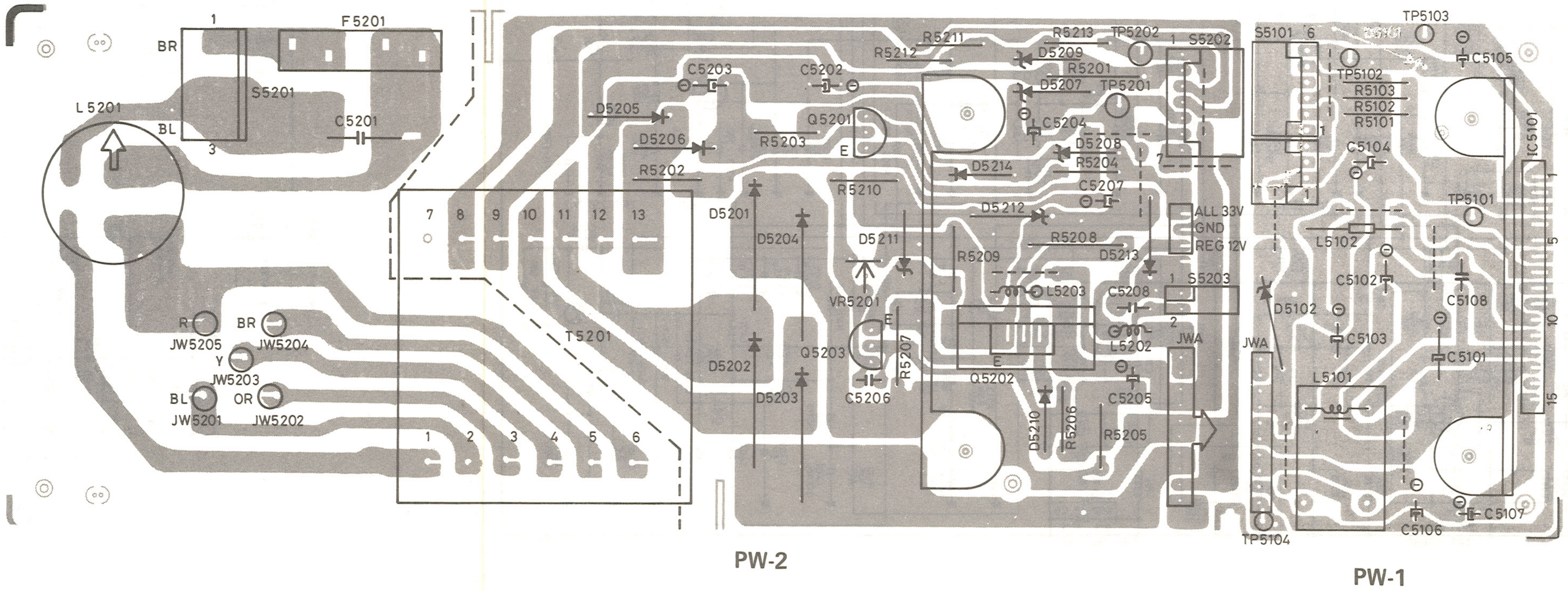
P.C.B. TN-2 CHANNEL PRE-SET SELECT (Continent)


R01
P01
S01
1
3
Q01
E
R02
C01
D08
D07
D06
D05
D04
D03
D02
D01
C05
R03
Q02
E
R04
R05
D19
D18
R11
R10
C04
H
G
F
E
D
C
B
A
Q03
E
R06
C03
SW01
IC01
Q04
D17
D16
D09
1
2
S02
R09
Q05
E
R13
R14
R15
C06
D14
R08
SW02
D11
D12
D15
1
D10
R12
2
S03
R07
VR01
V24200
LO. NO 6201~

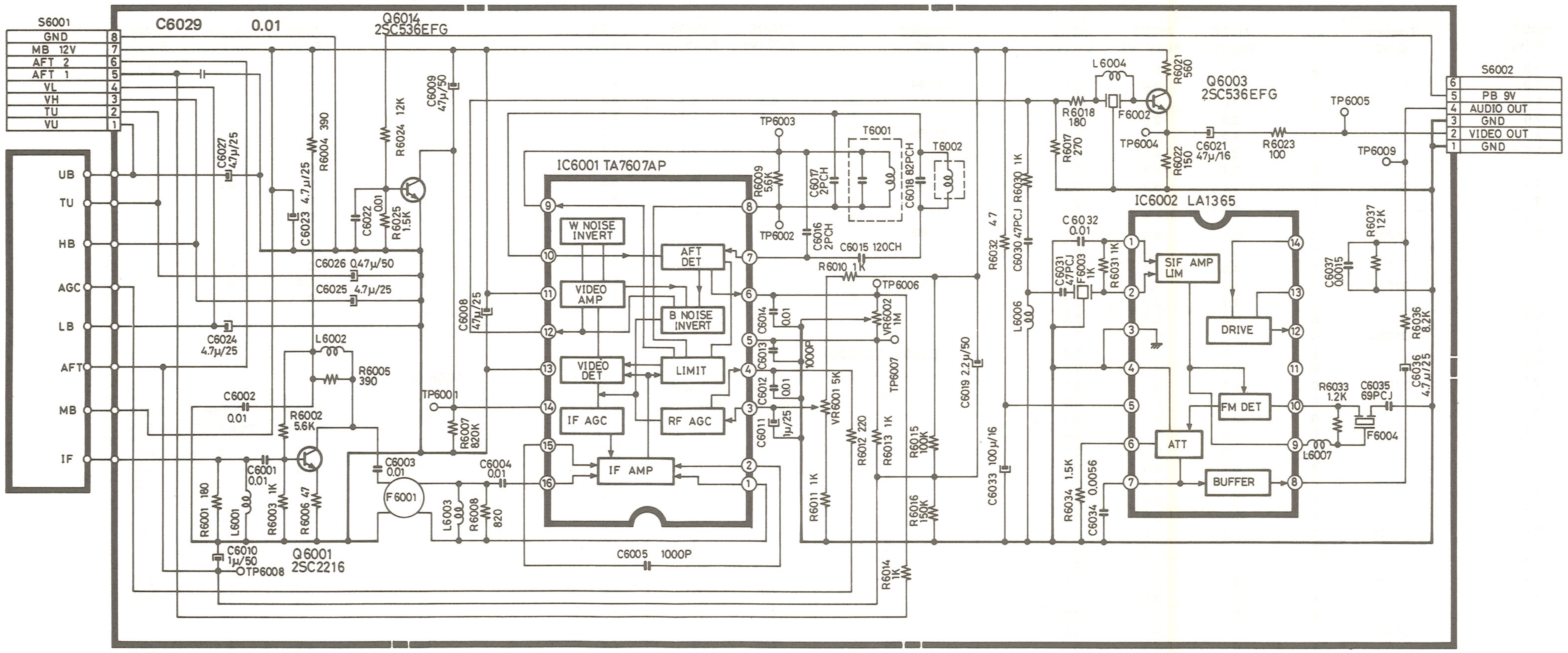
P.C.B. PW-1 · 2 (South Africa)


PW-2
PW-1
IC5101 STK7216
OSCILLATOR 35KHZ
P.W.M CONTROL
AC 220/240V 50HZ
S5201
BR AC IN
LB AC IN
L5201
F5201 T400mA250V
C5201 0.1μ/250
D5201~D5204 DSA17C R02Z
D5202
D5201
D5203
D5204
JWA
D5102 BZ150
C5105 100μ/16
C5103 1000μ/16
C5104 1000μ/16
C5106 10μ/16
L5102
C5101 2200μ/25
C5107 22μ/16
C5108 0.0018
L5101 180μH
G N D
REG +12V
G N D
REG +9V
S5101
GND
REG 9V
REG 12V
GND
REG 12V
REG 9V
C5202 22μ/100
C5203 100μ/100
D5207 BZ300
C5204 47μ/35
D5205 DS135D.C
R5201 1K1W
R5204 1K
D5206 DS135D.C
D5214 DS442
1S2473
D5208 GZA6.2Y XZ062
R5202 6.8K
R5203 6.8K
Q5202 2SD313D.E.F.
L5202 56μH
S5203
ALWAYS 9V
GND
ALWAYS 33V
GND
REG 12V
R5207 47 (1/2)
R5208 470 (2W)
TP5201
R5205 5.1K
D5210 1S2473 DS442
C5206 0.01
R5209 1K
R5206 510
VR5201 1K
DC 9.8V
C5207 100μ/16
D5212 BZ110
D5213 DS135D.C
C5208 0.01μ/50
S5202
GND
ALWAYS 20V
AC2.4V
AC2.4V
ALWAYS 10V
TIME BASE
POWER ON
C5105 47μ/35
D5211 GZA5.6Y XZ057
R5210 1.2K
TP5202
R5211 150
R5212 150
R5213 4.7K
D5209 GZA5.6Y XZ057
L5203 56μH
Q5201 2SC2274F
Q5203 2SC536D.E.F

P.C.B. PW-1 · 2 POWER SUPPLY (South Africa)


F5201
BR
S5201
L5201
BL
C5201
JW5205
JW5204
JW5203
JW5201
JW5202
T5201
D5201
D5202
D5203
D5204
D5205
D5206
C5203
C5202
Q5201
R5203
R5202
R5210
D5211
VR5201
Q5203
C5206
R5207
R5211
R5212
R6213
TP5202
S5202
D5209
R5201
D5207
TP5201
C5204
D5208
D5214
R5204
C5207
D5212
R5208
R5209
D5213
L5203
C5208
L5202
Q5202
C5205
D5210
R5206
R5205
ALL 33V GND REG 12V
S5203
JWA
S5101
TP5103
TP5102
C5105
R5103
R5102
R5101
C5104
IC5101
TP5101
L5102
C5102
D5102
C5103
C5108
C5101
L5101
TP5104
C5106
C5107
PW-2
PW-1

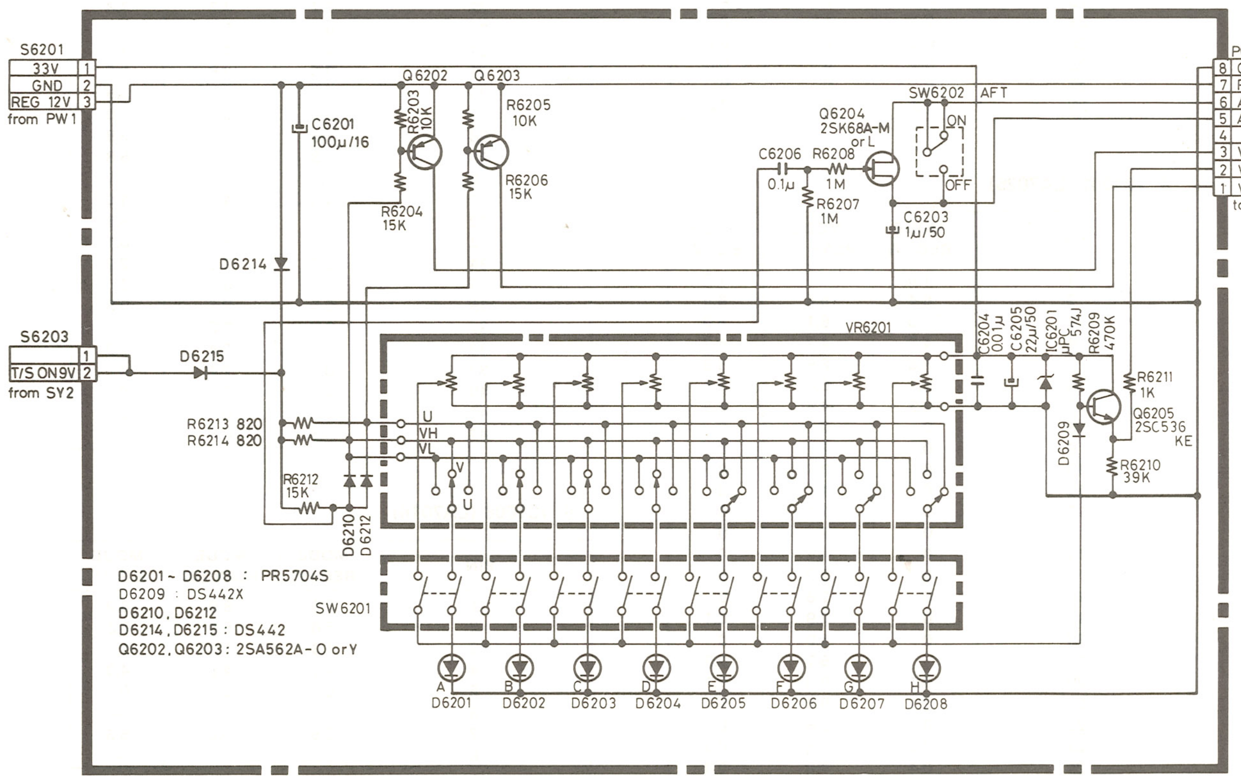
P.C.B. TN-1 IF CIRCUIT (New Zealand, South Africa)

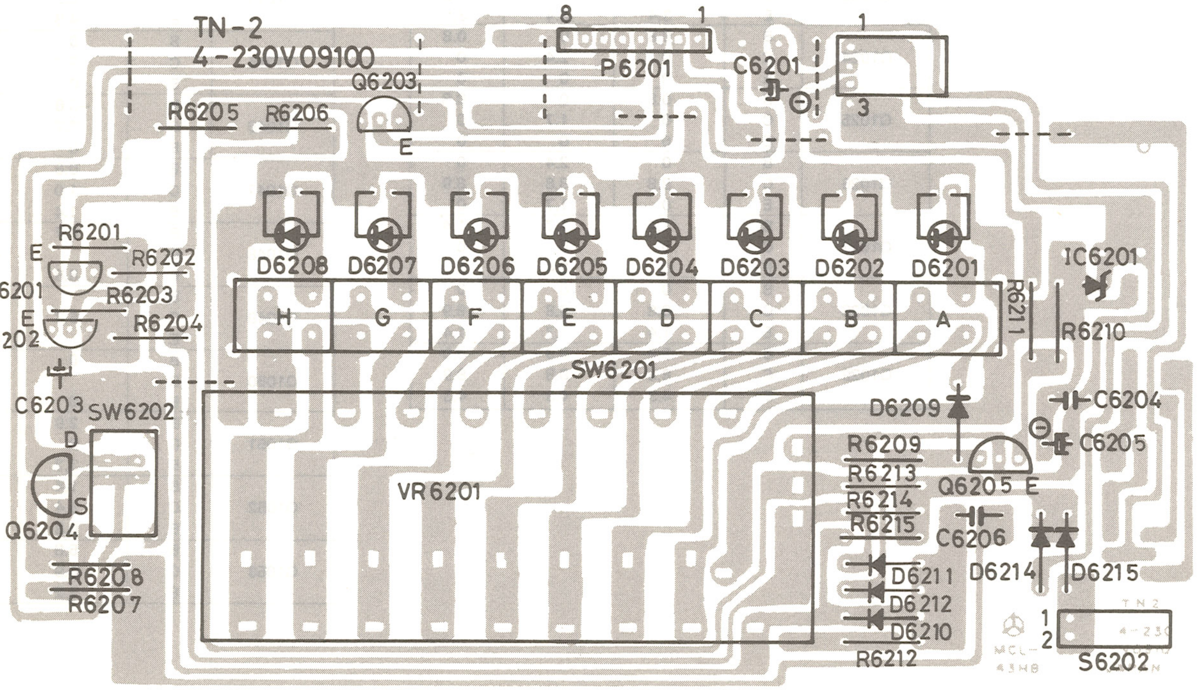

S6001
GND
MB 12V
AFT 2
AFT 1
VL
VH
TU
VU
UB
TU
HB
AGC
LB
AFT
MB
IF
C6029 0.01
Q6014 2SC536EFG
IC6001 TA7607AP
W NOISE INVERT
VIDEO AMP
VIDEO DET
IF AGC
AFT DET
B NOISE INVERT
LIMIT
RF AGC
IF AMP
F6001
Q6001 2SC2216
TP6008
TP6001
TP6002
TP6003
TP6004
TP6005
TP6006
TP6007
TP6009
T6001
T6002
VR6001 5K
VR6002 1M
C6005 1000P
L6004
Q6003 2SC536EFG
IC6002 LA1365
SIF AMP LIM
DRIVE
FM DET
ATT
BUFFER
F6002
F6003
F6004
S6002
PB 9V
AUDIO OUT
GND
VIDEO OUT
GND

NOTE

	New Zealand	South Africa
VR6002	1M	open
C6029	open	0.01
R6006	47	56
R6022	150	15
R6034	1.5k	0
R6036	8.2k	1.8k
R6037	12k	4.7k

P.C.B. TN-2 CHANNEL PRE-SET/SELECT CIRCUIT (South Africa)


S6201
33V
GND
REG 12V
from PW1
Q6202
Q6203
C6201 100μ/16
R6203 10K
R6205 10K
R6204 15K
R6206 15K
Q6204 2SK68A-M or L
SW6202 AFT
ON
OFF
C6206 0.1μ
R6208 1M
R6207 1M
C6203 1μ/50
P6201
GND
REG +12V
AFT2
AFT1
VH
VT
VU
to TN1
D6214
S6203
T/S ON9V
from SY2
D6215
R6213 820
R6214 820
R6212 15K
D6210
D6212
VR6201
C6204 0.01μ
C6205 22μ/50
IC6201 μPC574J
R6209 470K
R6211 1K
Q6205 2SC536 KE
R6210 39K
D6209
SW6201
D6201 ~ D6208 : PR5704S
D6209 : DS442X
D6210, D6212
D6214, D6215 : DS442
Q6202, Q6203 : 2SA562A-O or Y
D6201
D6202
D6203
D6204
D6205
D6206
D6207
D6208


TN-2
4-230V09100
P6201
C6201
Q6203
R6205
R6206
D6208
D6207
D6206
D6205
D6204
D6203
D6202
D6201
H
G
F
E
D
C
B
A
SW6201
R6211
IC6201
R6210
R6201
R6202
Q6201
R6203
R6204
Q6202
C6203
SW6202
D6209
C6204
C6205
R6209
R6213
R6214
R6215
Q6205
C6206
VR6201
Q6204
R6208
R6207
D6211
D6212
D6210
D6214
D6215
R6212
S6202

Voltage of VD-1

1. Transistor

Transistor Q NO.	PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
Q1004	B	4.2		4.3
	C	8.9	0	8.9
	E	3.5	0	3.5
Q1005	B	2.6	0.1	2.6
	C	2.6	0	2.7
	E	2.6	0	2.7
Q1009	B	0	2.5	0
	C	0.1	8.8	2.4
	E	2.7	1.8	2.7
Q1010	B		5.7	0.3
	C	0	2.5	0
	E	0.1	6.4	0.1
Q1011	B	0.1	6.2	0.1
	C	0	2.0	0
	E	0.1	6.8	0.1
Q1012	B	0.1	5.6	0.1
	C	0.1	8.8	0.1
	E	0	5.8	0
Q1013	B	0	3.4	0.1
	C	0.1	8.8	0.1
	E	0	3.4	0
Q1014	B	0	3.9	0.1
	C	0.1	8.8	0.1
	E	0	3.2	0
Q1015	B	0.1	5.3	0.1
	C	0	2.2	0
	E	0.1	6.0	0.1
Q1016	B	1.9	1.9	1.9
	C	8.9	8.9	8.9
	E	1.4	1.3	1.4
Q1017	B	4.5	4.4	4.4
	C	8.9	8.9	8.9
	E	3.6	3.9	3.6
Q1019	B	0.7	0	0
	C	0	8.9	8.9
	E	0	0	0
Q1020	B	8.1	8.9	8.9
	C	8.8	0.6	0
	E	8.9	8.9	8.9
Q1021	B	0.7	0	0.7
	C	0.1	8.9	0.1
	E	0	0	0
Q1022	B	4.1	4.1	4.1
	C	8.8	8.9	8.9
	E	3.4	3.4	3.4
Q1024	B	0.8	0	0.8
	C	0	2.4	0
	E	0	0	0
Q1025	B	0.8	0	0.8
	C	0	1.7	0
	E	0	0	0
Q1026	B	0	2.4	0
	C	8.8	8.8	8.9
	E	0	1.7	0
Q1027	B	1.4	1.7	1.4
	C	0	0	0
	E	0	2.4	0
Q1028	B	0	0	0
	C	8.8	8.8	8.9
	E	1.4	1.7	1.4
Q1029	B	5.0	5.0	5.0
	C	8.8	8.8	8.9
	E	4.3	4.3	4.3
Q1030	B	5.7	5.7	5.7
	C	8.8	8.8	8.9
	E	5.0	5.0	5.1
Q1031	B	2.9	2.9	2.9
	C	8.2	2.8	8.3
	E	2.3	4.5	2.3
Q1032	B	0.1	8.8	0.1
	C	0.1	8.8	0.1
	E	2.3	5.0	2.3
Q1033	B	0	1.7	0
	C	0.1	5.6	0.1
	E	0	1.2	0
Q1034	B	4.4	4.4	4.4
	C	8.8	8.8	8.9
	E	3.7	3.7	3.7
Q1035	B	0.6	0.6	0.6
	C	0	0	0
	E	1.3	1.3	1.3
Q1036	B	7.6	0	7.6
	C	8.3	0	8.3
	E	6.8	0	6.9
Q1037	B	2.7	0	2.7
	C	5.6	0	5.6
	E	2.0	0	2.0
Q1038	B	0.1	5.6	0.1
	C	0.1	8.8	0.1
	E	0	5.4	0
Q1039	B	0	2.0	0
	C	0.1	5.6	0.1
	E	0	1.3	0
Q1040	B	0	2.9	0
	C	0.1	5.2	0.1
	E	0	2.2	0
Q1041	B	0	3.7	0.1
	C	0.1	8.8	0.1
	E	0	3.0	0
Q1042	B	0	2.0	0
	C	0.1	6.2	0
	E	0	1.3	0
Q1043	B			0.7
	C			0
	E	0	0	0
Q1044	B	5.5	5.5	5.5
	C	8.9	8.9	8.9
	E	4.8	4.8	4.8
Q1045	B	0	0	0
	C	7.7	7.7	7.8
	E	0	0	0
Q1046	B	–3.6	–3.5	–3.6
	C	7.7	7.7	7.8
	E	0	0	0
Q1047	B	0.6	0.6	0.6
	C	1.0	1.0	1.0
	E	1.4	1.4	1.4
Q1048	B	8.7	8.8	8.8
	C			0
	E	8.8	8.8	8.9
Q1049	B			0
	C	6.3	6.3	6.3
	E			
Q1050	B	0	0	0
	C			
	E	0	0	0
Q1051	B	2.8	0.3	2.8
	C	0	0	0
	E	3.2	0	3.2
Q1052	B	1.4	1.4	1.4
	C	5.4	5.4	5.4
	E	0.8	0.8	0.8
Q1053	B	5.8	5.8	5.8
	C	8.9	8.9	8.9
	E	5.2	5.1	5.2
Q1054	B	5.0	5.0	5.0
	C	8.9	8.9	8.9
	E	4.3	4.3	4.3
Q1055	B	2.4	2.4	2.4
	C	7.5	7.5	7.5
	E	1.7	1.7	1.7
Q1056	B	3.7	0	3.7
	C	8.8	0	8.8
	E	3.3	4.8	3.3
Q1063	B	–0.5	–0.5	–5.0
	C	0.2	0.2	0.2
	E	0	0	0
Q1064	B	6.2	0	6.2
	C	8.9	0	8.9
	E	5.5	0	5.5

2. IC1001 (LA7020)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	0	0	0
2	6.8	0.4	6.8
3	2.0		3.0
4	6.8	0.4	6.8
5	8.2	0	8.2
6	8.9	0	8.9
7	3.0		3.0
8	7.0	0	7.0
9	4.0	0	4.0
10	2.0	0	2.0
11	7.8	0	7.8
12	0.3	0	0.3
13	0	0	0
14	7.9	0	7.9
15	1.0	0	1.0
16	5.7	0	5.7
17	0.7	0	0.7
18	4.4	0	4.4
19	5.0	0	5.1
20	–	–	–
21	–	–	–
22	8.9	0	8.9
23	4.1	0	4.1
24	2.7	1.8	2.7
25	6.2	0	6.2
26	5.0	0	5.0
27	0	0	0
28	7.3	0	7.3

3. IC1002 (LA7025)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	1.0		1.0
2	6.4	6.4	6.5
3	6.0	6.1	6.0
4	4.7	4.7	4.7
5	8.8	8.9	8.9
6	6.1	6.0	6.1
7	3.3	4.8	3.3
8	0	0	0
9	0.1	7.1	0.1
10	0	3.7	0
11	0	1.7	0
12	0	5.3	0
13	0	2.1	0
14	0	4.2	0
15	0	2.8	0
16	0	2.8	0
17	0	7.9	0.1
18	0	1.0	0
19		5.7	0.3
20	0.1	6.8	0.1
21	0.1	8.8	0.1
22	0	0.8	0
23	0.1	6.5	0.1
24	0.4	4.0	0.4
25	0.4	4.0	0.4
26	0.1	1.5	0.1
27	0	2.6	0
28	0	0	0

4. IC1003 (LA7013)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	0	4.7	0
2	0	8.0	0
3	0	0.1	0
4	0	3.7	0
5	0	4.9	0
6	0.1	4.9	0.1
7	0	0.8	0
8	0	5.2	0
9	0.1	8.8	0.1
10	0.1	5.4	0.1
11	0.1	2.2	0.1
12	0.1	2.0	0.1
13	0.4	4.0	0.4
14	0.4	4.0	0.4
15	0	8.8	0
16	0	0	0

5. IC1005 (M51437P)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	5.9	5.9	5.9
2	3.2	3.2	3.2
3	1.2	1.2	1.2
4			
5	6.7	6.7	6.7
6	–	–	–
7	2.4	2.4	2.4
8	0	0	0
9	3.1	3.1	3.1
10	8.8	8.8	8.9
11	–	–	–
12	–	–	–
13	6.6	6.7	6.6
14	6.1	6.0	6.1
15	6.0	6.0	6.0
16	5.8	5.8	5.8
17	7.1	7.1	7.1
18	0	0	0
19	2.3	5.8	2.3
20	8.8	8.6	8.9
21	5.5	5.4	5.5
22	7.7	7.7	7.8
23	0	0	0
24	4.3	4.3	4.3
25	2.5	2.5	2.5
26	5.8	5.8	5.9
27	5.0	5.1	5.0
28	5.8	2.3	5.9
29	5.8	5.7	5.8
30	7.1	7.1	7.1
31	4.0	4.1	4.0
32			5.8
33	0.1	8.1	0.1
34	2.7	2.6	2.7
35	0	0	0
36	0.5	2.7	0.5
37	2.7	0.5	2.7
38	2.9	2.4	2.9
39	0.1	2.4	0
40	0	0	0
41	0	0	0
42	8.8	8.8	8.9

6. IC1008 (LA7016)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	8.9	8.9	8.9
2	5.6	5.6	5.6
3	1.3	1.3	1.3
4	4.9	4.9	4.9
5	0	0	0
6	–	–	–
7	5.5	5.5	5.6
8	–	–	–

7. IC1007 (M50180P)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	0	0	0
2	4.5	4.5	4.5
3	8.9	8.9	8.9
4	2.7	2.7	2.7
5	8.7	8.7	8.7
6	8.0	8.0	8.0
7	8.8	8.8	8.8
8	1.0	1.0	1.0
9	6.6	6.4	6.7
10	8.9	8.9	8.9
11	4.0	4.0	4.0
12	2.5	8.9	2.5
13	0.5	0.5	0.5
14	4.4	4.4	4.4
15	0.9	8.2	0.1
16			5.5
17	0	0	0
18	0	0	0

8. IC1009 (M51439P)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	0	0	0
2	5.9	5.9	5.9
3	3.9	3.9	4.0
4	0	0	0
5	4.5	4.6	4.6
6	4.5	7.3	7.3
7	0	0	0
8	4.8	4.8	4.8
9	5.1	5.1	5.1
10	3.3	3.3	3.3
11	5.1	5.1	5.1
12	0.4	3.2	0.4
13	8.9	8.9	8.9
14	8.9	8.9	8.9
15	6.2	6.2	6.2
16	8.9	8.9	8.9
17	3.6	3.6	3.6
18	3.6	3.6	3.6
19	5.9	5.9	5.9
20	0	0	0
21	5.9	5.9	5.9
22	0	0	0
23	4.6	4.6	4.6
24	3.0	3.0	3.0
25	5.9	5.8	5.9
26	2.0	2.0	2.0
27	5.1	5.2	5.1
28	7.0	7.0	7.0
29	1.8	1.8	1.8
30	1.8	1.8	1.8

9. IC1006 (M51438P)

PIN	MODE REC (V)	MODE PLAY (V)	MODE E E (V)
1	7.2	7.2	0
2	8.0	8.0	8.1
3	1.5	1.5	1.5
4	6.5	6.5	6.5
5	3.0	3.0	3.0
6	–	–	–
7	0	0	0
8	3.3	3.3	3.3
9	8.9	8.9	8.9
10	0.5	0.5	0.5
11	2.8	2.8	2.8
12	3.3	3.2	3.3
13	4.1	5.4	4.1
14	4.6	6.1	4.6
15	2.5	7.8	2.5
16	0.1	8.8	0.1
17	6.7	6.4	6.7
18	0	0	0
19	3.3	3.2	3.3
20	3.8	3.8	3.8
21	8.9	8.9	8.9
22	4.1	6.0	4.1
23	5.7	6.0	5.8
24	5.2	5.5	5.3
25	4.5	4.5	4.5
26	4.0	4.0	5.9
27	8.9	8.9	8.9
28	3.9	3.9	3.9
29	0	0	0
30	8.9	8.9	8.9